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RADIATION SICKNESS

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THE timeliness and importance of this subject can be illustrated by three quotations. The first is from a statement authorized by the Council on Physical Medicine of the American Medical Association, and published in the *Journal of the A. M. A.*, November 13, 1948. The statement comes from the Council's Consultation Committee on Roentgen Rays, Radium and Medical Aspects of Atomic Energy. One paragraph of the statement reads as follows:

"The atomic age confronts the medical profession with seemingly unlimited opportunities, but equally with the gravest responsibilities. To match the eagerness with which he plunges into the investigation of the tremendous possibilities of advance in medical knowledge, the physician investigator must possess the keenest awareness of the hazards to himself, his patients and working associates involved in the study and manipulation of radioactive isotopes and other products of atomic fission. Fundamental is the fact that there is no antidote to radiation injury. Prevention and unrelenting watchfulness are the requirements for what may be called radiation hygiene. Even physicians who are not engaged in this research must have knowledge of the technics involved, for they may have patients who have been exposed to radiations."

The second quotation is from an editorial by Dr. Newell, Professor of Radiology at Stanford University Medical School, and one of the consultants to the A.M.A. Council. His editorial is a comment on their statement, reproduced in the *American Roentgen Ray Journal*, May, 1949. A paragraph from it reads:

"The making of the atom bomb was complicated by the most extraordinary health hazard that the world has ever known, insidious in the

extreme, inappreciable to the senses, late to reveal the injuries produced and only to be detected by methods novel to the usual guardians of health—the physicians. The control of this hazard was the achievement of a unique cooperative effort by physicists, chemists and physicians, and the specific discipline developed received the name: Health Physics. On this is founded a special branch of Industrial Preventive Medicine which we can call Radiation Hygiene: the art of avoidance of injury by radiation machines and radioactive products.

"With the availability of radioactive isotopes for medical and industrial researches and ultimate wide application, the need for training in radiation hygiene is spreading to medical schools and hospitals and to research institutes and factories. Not only the industrial surgeon and radiologist must take this up, but *every* physician must learn its fundamentals."

The third quotation is a paragraph from Ladd's book, "Must We Hide?" urging on us the grave responsibilities of the medical profession, as we face the somewhat uncertain future of the atomic age. The paragraph in question reads:

"In the present age of medical specialization there are many physicians who are not skilled in recognizing the symptoms of radiation sickness and who are not familiar with the latest developments in treatment. These men must be kept informed of the latest results of research and the preferred methods of treatment recommended by leaders in the field. Fortunately the basic training of physicians is sufficiently broad to permit them to be indoctrinated with a minimum of effort. The American Medical Association will do well to note the burden that may be thrust upon its members and to consider means for rendering all possible assistance."

Any good sermonizer, having read the Scripture, will select a text, and this is to be found in

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an article by Prosser and associates, on radiation intoxication, in Radiology for September, 1947. This text reads:

"Every kind of ionizing reaction is similar in its clinical aspects, whether it be from penetrating external radiation, or internal radiation from deposited material."

In other words, radiation sickness is the same, whether produced by x-rays, by injected radioactive isotopes of chemical elements, or by the gamma radiation from radium or atomic fission. Therefore, we can, and do apply what we have learned about roentgen ray sickness during the past fifty years to our study of and treatment of radiation sickness from any cause. To this end it will be instructive to review briefly the development of our knowledge of x-ray toxemia, this development being indicated roughly by its changing terminology through the years. Starting with Walsh's first report in 1897 on "toxic reactions from x-rays", the syndrome has been described under such names as: roentgen toxemia, roentgen intoxication, roentgen sickness, roentgen constitutional reactions, and now the more general and inclusive term RADIATION SICKNESS, by whatever agent or in whatever manner produced.

We can conveniently study the development of this knowledge by dividing the period since the discovery of x-rays into five eras of approximately a decade each.

1895 - 1907. Constitutional reactions following x-ray treatments seem to have been first reported by Walsh of Germany in 1897, and during the succeeding years many observations were made by other workers regarding such systemic reactions. In this country, Edsall and his collaborators at the University of Pennsylvania wrote repeatedly on the subject. Their paper in March, 1907 (Amer. Jour. Med. Sci.) on "The Nature of the General Toxic Reaction Following Exposure to X-rays," cited three cases of severe systemic reactions, two of which were fatal. It is interesting to note that what happened to these two patients with pathological blood conditions accurately forecast in miniature what took place forty years later in the mass killing by gamma radiation, when atomic bombs were exploded over Hiroshima and Nagasaki. Edsall's patients were treated with old-fashioned gas tubes which delivered an unknown amount of x-ray of unmeasured wave length, and the technic described would indicate that the

body was not shielded, so that whole body radiation was received by the patients. These patients with lymphoblastomas had such an overwhelming destruction of the white cells that they could not eliminate the waste products fast enough to survive. Radiologists soon learned that even the normal human organism will tolerate only a very small dosage of radiation delivered at one time to the whole body surface. Such blastomas today are treated through small portals and with small doses spaced far enough apart to allow the excretion of the waste products of leucocytic destruction. We have seen only one fatality in our own experience which seemed to be the direct result of irradiation. This was a young Mexican man with a very large mediastinal lymphosarcoma, who was treated about twenty years ago. We gave him a moderate dose of x-ray to the anterior mediastinum; he seemed to tolerate this very well, and, in order to accommodate his time schedule, we very unwisely repeated this the next day, and allowed him to return to his home. The tumor melted like an ice cake in the July sun in Phoenix; in two weeks, it was entirely gone, and so was the patient! He could not handle the products of tumor tissue destruction and died in extreme radiation toxemia.

The second decade 1908 - 1917 was marked by the effort to bring under control, measure and evaluate the effects of x-rays, which were still being produced by gas tubes of various types. Toward the end of this decade the Coolidge tube was developed and this markedly changed the whole aspect of radiation treatment and radiation reactions. World War I slowed down research to a large extent. One of the best papers coming out of the experiences of this period was by Hall and Whipple (Am. Jour. Med. Sci., April, 1919), entitled "Roentgen Ray Intoxication" dealing with "the general constitutional reaction which follows prolonged exposures to the roentgen rays of the Coolidge tube."

1918 - 1927. Following the close of World War I, and with improvement in the Coolidge tube, a great impetus was given to new technics in x-ray treatment. The Germans advocated and tried out the massive dose technic, whereby effort was made to destroy cancer by a continuous radiation lasting six or eight hours, or even longer. Radiologists in this country never followed that technic but modified it in various ways, breaking up the treatment in such a man-

ner as would be best tolerated by the patients. The term "tolerance dose" came into use, based on the radiation sickness or intoxication, so that study of this sickness engaged the attention of radiologists, pathologists and physiologists. Much research work was carried out seeking to find the cause of the radiation toxemia. Experiments were carried out on acidosis, the alkaline reserve, water balance, chloride retention, toxic nephritis, autolytic ferments, gastric and intestinal secretions, leukopenia, and destruction of various tissue cells. Toward the close of this period, the situation was well summarized by Henry Schmitz of Chicago (*Radiology*, March, 1924). His statements and conclusions are still true, and pertinent for any type of radiation sickness. Quoting a few of these:

"The Radiation Intoxication: The symptoms are anorexia, nausea, vomiting, diarrhea, rise in temperature, increase in pulse rate, and marked prostration. . . . The symptoms are toxicemic and mainly gastro-intestinal. . . . The acute symptoms may come within a few hours, or may be delayed for days or even weeks.

"Cellular destruction follows exposure to x-rays. The split proteins give rise to the acute intoxication. . . . It seems probable that the radiation sickness is due to an absorption into the circulation of the protein liberated by destruction of cells. It is more marked in a person already in a toxic condition from autolytic processes taking place in the cancer. . . . We should distinguish between the symptoms due to the acute constitutional toxemia and those caused by injury of the tissues and organs exposed to the x-rays."

1928 - 1938. Patients were treated with larger and larger doses of more and more penetrating x-rays. Super-voltage technics began to be tried, that is, x-rays produced by voltages above the conventional 200 and 220 kv. Since the radiation sickness was often a definite barrier to increasing the dosage of x-rays, attention was directed to combating this intoxication, or relieving it. Many remedies were tried. Barbiturates and other sedatives have been used for symptomatic relief; liver extract and thiamin, on the basis that they supply deficiencies produced by the radiation; antihistamines have been used on the theory that radiation sickness releases histamin and brings about an allergic reaction; the latest remedy advocated is the adrenocortical extract on the basis that radiation sickness is due to a deficiency of the adrenal secretions. Growing out of the accumulated experience, several essentials in preventing constitutional

radiation sickness, or too great local tissue damage, are now universally recognized, and the reasons for these are applicable to radiation from any source to which the human organism may be subjected.

1. Selective dosage, based on the sensitivity of the condition or lesion to be treated. In the gradation of sensitivity of cells, the white blood cells, the hematopoietic cells of bone marrow and gonadal cells are the most sensitive to radiation, while the nerve cells, muscle cells and bone cells are the least sensitive.
 2. Judicious spacing of treatments, so as to stay within the patient's general tolerance.
 3. Screening so as to confine the radiation to the involved area. This was not done in Edsall's patients previously mentioned. The body will tolerate 500 roentgen units delivered through a portal 20 cm. square, whereas one-tenth of that amount delivered in one sitting to the anterior or posterior surface of the whole body might prove fatal—and the 500 units certainly would kill almost any person, if given to the whole body surface.
 4. Cross-firing, so as to avoid normal tissues as far as possible, while building up adequate dosage in the involved tissue.
 5. Suitable medication for the individual case.
 6. Watching for blood changes, especially leucopenia, with appropriate treatment, by adjusting x-ray dosage, by hematinics, or by blood transfusions.
- 1939 - 1949. The great achievement of the last decade was the production of radioactive isotopes of the chemical elements—which is the chemical and physical basis of the atomic bomb. The build-up of our knowledge leading to this achievement can be briefed in ten steps:
- (1) Following the discovery of the unknown rays which Roentgen called "X" because they were unknown, came the discovery of the electrons as the unit of atomic structure, and then the establishment of the fact that x-rays are generated whenever fast-moving electrons are suddenly stopped by striking other larger material particles.
 - (2) The realization that the x-rays in an x-ray tube are produced by a stream of electrons striking the target of the tube.
 - (3) The development of the ability to control

the number of and the speed of the electrons in the Coolidge tube.

(4) The diversion of the flow of electrons away from a central target and out through a window of an x-ray tube, the Chaoul technic.

(5) The realization of the fact that x-rays or gamma rays of radium bring about ionization or detachment of electrons from the atomic structure of tissue cells.

(6) Development of the ability to ionize or break down the atomic structure of chemical elements by bombardment with high speed electrons.

(7) Development of apparatus for increasing the speed of electrons up to the speed of beta radiation of radium—these beta radiations being nothing but high speed electrons.

(8) The discovery of a third atomic particle—the neutron—in addition to the already known negatively charged electron and the positively charged proton of the atomic nucleus.

(9) The fact that bombardment of atoms with high speed neutrons and the introduction of these into the atomic structure will so disrupt that structure as to produce a radioactive isotope of the chemical element, or a neighboring one in the atomic chain.

(10) Finally, the ability to start a chain reaction of atomic fission, releasing the latent energy of the atoms so fast as to be explosive. Such atomic fission is always accompanied by incredible amounts of gamma radiation.

Physicists can now produce radioactive isotopes for any one of the 95 or 96 chemical elements. Some of these are coming into use for therapeutic purposes and doubtless others will soon be available. This growing use places a great responsibility on medical men in general to understand the dangers to themselves and to their patients in handling or administering any radioactive element or salt. Any of them can produce radiation sickness, either of a primary transient type, or the more dangerous permanent type.

Just as we were closing this half century's experience with x-rays and radiation reactions, there was suddenly dumped into the lap of the medical profession the problem of evaluating, protecting against, or treating, the radiation reactions or injuries produced by the explosive release of atomic energy. The wholesale destruction of the two Japanese cities by atomic bombs

presented us with thousands of human victims of radiation, who graphically reproduced in the human organism the reactions and injuries from x-rays which had been observed during the preceding twenty-five or thirty years in various animals, in research departments of hospitals, clinics and laboratories. Research workers with x-rays had killed dogs, rabbits, guinea pigs, mice, chickens, goats and other animals by concentrated doses of x-rays. In other experiments sub-lethal doses of x-rays had been given and the tissue changes and symptoms of radiation sickness observed. We had assumed that the doses fatal to dogs and goats would also be fatal to human beings, but the ethics of a peacetime civilization would not permit the actual proving of this assumption. Since war has no ethics, the destruction of Hiroshima and Nagasaki presented us, as a side issue of that holocaust, a gigantic experiment in radiation sickness. This suddenly thrust upon us the imperative need for every doctor to develop an interest in, and a working knowledge of, radiation sickness and radiation tissue damages. It is a need we would prefer not to face, but which we cannot escape, because of the vital part the medical profession must play in the event of an atomic warfare. There is an almost frantic effort on the part of scientists and medical research workers in atomic fission to learn as much as possible about the effects of radiation and how these may be avoided, prevented, minimized, or treated. This is frankly in preparation for that possible, if not inevitable, day of disaster, when large segments of our population will suffer radiation injuries, and the medical profession be called on to care for the survivors.

Turn your imagination loose and suppose that Phoenix, Arizona should be one of the cities selected to be attacked by atom bombs in World War III, which will, doubtless, be precipitated as unexpectedly as was Pearl Harbor. If the bomb should be exploded over the Hotel Westward Ho about six o'clock some afternoon, what would be the effect? In addition to razing all the office buildings downtown and killing hundreds of people by the blast concussion and searing heat, the gamma radiation released by such a bomb would be immediately fatal to every survivor of the blast and heat within a radius of 4,000 feet from the zero point of explosion—or for those familiar with Phoenix between Seventh Avenue and Seventh Street, McDowell and the

railroad tracks—everyone would be killed except the people who might happen to be inside concrete buildings behind walls a foot thick. The gamma radiation from such a bomb is equivalent to that which would be given off from 100,000 pounds of radium—or fifty tons, and there is barely five pounds of radium in the whole world today. The statements just made apply to such bombs as were tested at Bikini, and we are told that they have been made much more powerful since then. Hence it is safe to say that a fatal dose of gamma radiation would be delivered to every person exposed within one mile of the zero point of explosion. For another mile beyond that limit, the gamma radiation would still be fatal, but more gradually so, to 75% of the people exposed. Further out the effects would diminish in proportion to the square of the distance, and such victims might recover in time, with appropriate treatment. In other words, in the outer suburbs of Phoenix, the doctors of that city would find the patients to whom it would

be worth while giving attention, provided the doctors themselves survived.

In closing, the statement will bear repetition, that the clinical and pathological aspects of all types of ionizing radiation duplicate those produced by x-rays, so that if we would learn about radiation injury of any kind, it is natural to turn to the great reservoir of knowledge accumulated by radiologists during the past fifty years. The warning by Walsh in 1897 that x-rays can produce a toxic sickness has blossomed out many thousand fold into the great field of atomic energy radiation destruction. What we will do with this knowledge—whether it will be used to serve the world or destroy civilization—is not yet apparent. While we wait on the history makers to decide this, it behooves us as doctors to keep informed and be ready for the task of treating radiation sickness in days of peace, and for the greater task of "saving the pieces" as far as possible, if and when the evil days come upon us.

USE AND ABUSE OF THE LOW SODIUM DIET IN HYPERTENSION

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THE present status of the low sodium diet in hypertension is such that a revaluation of its use and abuse may be interesting.

It would be well first, to review a paper by Ayman¹ which was published in 1930. Ayman pointed out that many articles have been written regarding treatment in hypertension and that practically every article reported symptomatic relief. No author admitted complete failure. Symptomatic relief was always greater than reduction in blood pressure and often relief was obtained while the blood pressure remained the same.

Ayman studied forty patients with hypertension. These patients received a complete history and physical examination. Ayman then seriously and enthusiastically prescribed ten drops of dilute hydrochloric acid in one-half glass of water before meals, three times a day. Thirty-three of the forty patients, 82 per cent, showed definite improvement ranging from partial to complete relief of symptoms. Most patients improved

after one week but some did not respond until three or four weeks. Only three untoward results occurred: the medicine made one patient so tired that she had to lie down after taking it; in a second patient it caused generalized pruritus with nothing to be seen on the skin, and the third patient, after three days, was seized with such headache, nausea and vomiting that she had to remain in bed for one week. Ayman points out that none of the hundreds of methods of treatment have any specificity. All have in common the enthusiastic treatment of the worried patient.

The statement² "always use the new drugs while they still have the power to heal", applies certainly to hypertension. While the physician is enthusiastic he obtains good results; when the physician becomes skeptical the previously valuable drug becomes worthless. Even the laity are amused when the druggist holds a vial before a prospective customer and says, "It has been a wonder medicine for over a week now."

Smith³ states that the fundamental trouble is that we have no method of evaluating hyper-

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tensive disease other than by blood pressure and blood pressure even when repeatedly recorded over a protracted period is a clinical quicksand. A single reading is virtually worthless since blood pressure can be raised or lowered by a variety of unrelated factors. Patients should be hospitalized for three to four weeks and repeated blood pressures taken before a true baseline obtains. It is well known that a nurse or assistant may find the blood pressure relatively low, but when the physician takes it, the pressure may rise to surprising heights. With this in mind let us consider the low sodium diet in hypertension.

Ambard⁴ in France was using the low salt diet in 1905. Allen^{5, 6} advocated the low sodium diet for hypertension as early as 1920 in this country. Moderate restriction of sodium usually fails to influence the blood pressure and this is probably why the low sodium diet has not been too successful. McLester,⁷ O'Hare and Walker⁸ and Berger and Fineberg⁹ did not use a sufficiently low sodium diet and thus did not get maximal effect. Observations of Mosenthal¹⁰ in patients that the addition of sodium chloride to the diet did not further elevate the blood pressure tended to discredit the low sodium diet and it was not much used until 1944 when Kempner¹¹ published the results of his rice diet. It is very probable that the salt restriction which obtains in a rice diet is responsible for the results reported by Kempner.¹²

Perera and Blood¹³ found that rigid withdrawal of NaCl from the diet resulted in significant weight loss and increased urinary output in non-hypertensive subjects, but not in patients with hypertensive vascular disease. This difference in response indicates a disturbance in salt and water metabolism in hypertension referable to renal changes probably mediated by the adrenal cortex.

Perera and Blood¹⁴ further studied the relationship of sodium chloride to hypertension. Men and women with uncomplicated hypertension were studied. Blood pressure was higher than 140/90. Laboratory studies were negative. Blood pressure was taken at the same time every morning in bed. Five to seven readings were done and the lowest recorded. This is called "resting blood pressure." Any other blood pressure is "casual blood pressure." Patients were hospitalized for three weeks with no treatment. Patients had the same measured

fluid intake daily and the same food daily with sodium chloride removed and then 4 grams added. Daily urine chloride, blood carbon dioxide, chloride, sodium, potassium, protein, urea nitrogen and serum volume were done.

After a three weeks baseline sodium was withdrawn. A decrease in resting blood pressure was noted in all patients from three to five days after withdrawal of sodium from the diet. Blood pressure returned to previous levels when sodium was added. The majority of readings, however, remained above 140/90.

Blood Pressure Before	Blood Pressure second week of Na Restriction
164/106	148/92
168/110	152/96
182/104	160/92
160/98	140/90
162/110	146/100
182/116	168/108

Slight weight loss and small increase of urine output occurred. Urine sodium chloride decreased. Other laboratory findings were unchanged.

The effect of increased sodium on blood pressure was then determined in a similar fashion. Six patients were maintained on the above schedule for three weeks. Sodium chloride was then increased to 15 grams daily for eight days. Rise in resting blood pressure was noted in one to four days with a return to normal when sodium chloride was reduced to 4 grams. Again casual readings were not influenced. There was slight weight gain and decrease in urine output. Other laboratory studies remained unchanged.

Blood Pressure before Increased NaCl Intake	Blood Pressure after 8 days of Increased NaCl Intake
140/96	158/108
166/100	180/112
162/112	164/116
146/92	160/102
162/102	178/110
172/102	184/110

The effect of rigid sodium restriction is apparently unrelated to changes in circulatory volume or cardiac output. It must, therefore, be due to alterations in peripheral resistance. Sodium restriction affects only certain phases of the peripheral resistance because the patient's ability to respond to autonomic or neurogenic stimuli is unaffected. "Previous uncertainties concerning the effect of many therapeutic agents

may have been due to the failure to dissociate between extrinsic (neurogenic) and direct actions on peripheral resistance, both of which seem to be involved—in variable proportions—in clinical hypertension.¹⁴

The low sodium diet-forced fluid management of hypertension was recently studied by Bryant and Blecha at the University of Michigan.¹⁵ For periods of several weeks to one year 100 patients with essential hypertension were placed on a diet of 2200 calories, containing approximately 200 mgm. of sodium, 2.2 gm. of potassium, 70 gm. of protein, 80 to 175 gm. of fat, 130 to 230 gm. of carbohydrate and vitamin supplements. The daily fluid intake was 3000 c.c. No pretreatment blood pressure was below 170/100. There was a significant lowering of blood pressure to or below 155/95 in about 20 per cent of the cases, and a lowering of diastolic pressure to or below 95 in an additional 15 per cent. Several patients who originally displayed papilledema and moderately severe heart failure became free of symptoms and have shown a definite decrease in heart size along with the fall of blood pressure. Older patients with long-standing hypertension have experienced more striking improvements than younger patients.

An interesting comparison of changes in hypertension with surgical and dietary management is seen in the following chart.

The low sodium diet should be tried in essential hypertension with negative laboratory findings, in older patients with long standing hypertension and in arteriosclerotic and hypertensive vascular disease with cardiac, cerebral, retinal or renal involvement. It should be used as a therapeutic test before sympathectomy is considered.

The low sodium diet should not be used when hypertension is due to pheochromocytoma, pyelonephritis, congenital hypoplasia of the kidney, hydronephrosis, hypernephroma, atrophic kidney with ureteral occlusion, radiation sclerosis of one kidney, ureteral occlusion, renal infarction, pyonephrosis or unilateral renal tuberculosis.

The low sodium diet requires the strictest cooperation between the patient and physician. Failure will result if a complete understanding and honesty does not exist between the patient and physician. The low sodium diet is abused if the physician hurriedly tells the patient that he has high blood pressure and to stop using salt. The doctor must explain the program in detail and the patient should come back at weekly intervals for a time.

The question of salt substitutes usually arises. Patients who have been on a low sodium diet for some time usually prefer none. The disadvantage of salt substitutes is that they do not taste like salt. In some salt substitutes lithium has been used as one of the ingredients. The chief advantage of lithium chloride over other substitutes is that it more closely approximates the taste of sodium chloride. It has recently been noted that the use of lithium chloride in patients on a low sodium diet may cause toxic signs and symptoms.^{16, 17, 18}

If the patient does not use salt substitute, a simple test of the urine is available which determines roughly the urine chloride. Since the urine chloride and sodium are grossly parallel, the test may be done to determine the patient's urinary sodium output and thus his sodium intake.

One drop of 5% solution of potassium chro-

BLOOD PRESSURE CHANGES IN HYPERTENSION WITH SURGICAL AND DIETARY MANAGEMENT

Groups	Diastolic Reduction	Smithwick*		Splanchnic†		Low Sodium‡	
		Cases	%	Cases	%	Cases	%
I	30	64	41.0	33	16.5	8	17.8
II	20-29	32	20.5	33	16.5	18	40.0
III	10-19	28	17.9	34	17.0	8	17.8
IV	to 9	17	10.9	50	25.0	5	11.1
V	higher	15	9.7	50	25.0	6	13.3

* Follow up 156 patients 1-5 years post surgery.

† University Hospital—200 patients living out of 238 operated (bilateral supra diaphragmatic splanchnicectomy and lower dorsal sympathetic ganglionectomy 1-2 years later).

‡ 45 unselected hypertensive patients treated for several weeks to 14 months with 200 mgm. forced fluid regimen.

mate is added to ten drops of urine. A 2.9% solution of silver nitrate is added drop by drop until the solution changes to a red color which is the end point. Each drop of silver nitrate is roughly equal to one gram of NaCl in the urine per 24 hours. Thus if it is necessary to add three drops of silver nitrate to get the persistent red color, the patient has taken 3 grams of NaCl in the diet the past 24 hours. Normal diet gives a urine which requires from 6-11 drops of silver nitrate, approximately 6-11 grams of NaCl in the diet. The patient is not on a low sodium diet until one drop of silver nitrate produces the red color. This means that the patient is eating less than one gram per day of NaCl if he is not using a salt substitute.

In conclusion, several facts should be pointed out. Much conflicting evidence still exists regarding the low sodium diet in hypertension.²⁰ Some authors conclude that there is nothing to suggest that the small changes in resting blood pressure associated with rigid sodium restriction are of therapeutic significance or that prolonged restriction will exert any influence on the natural history of hypertension.¹⁴ Other authors have demonstrated marked subjective improvement which includes drop in systolic blood pressure of 40 mm. of mercury or more, drop of diastolic pressure of 20 or more mm. of mercury, improvement in eye grounds, decrease in heart size and changes in the EKG consisting of decrease in the axis deviation, change of T₁ in the direction from inverted to upright.¹⁹ Still others¹⁵ state that results in essential hypertension with low sodium diet are better than those achieved by operation and this is especially so for those with far advanced heart and eye ground changes.

It is believed at present that the low sodium diet has a definite place in the management of hypertensive vascular disease.

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SECRETARY'S LETTER

Many types of letters are addressed to the president of the American Medical Association, but Dr. Ernest E. Irons received one last week that is a No. 1 morale builder.

Reading it, said Dr. Irons with a smile, one becomes suddenly aware of a fresh breeze blowing through tired brain cells.

The letter did not come from a doctor. It was written by Mr. Joseph Christensen, of the Progressive Cafeterias in Chicago, and reads as follows:

"I cannot put M. D. after my name but I can, at least for a while, still put U. S. A. As a consequence, please accept the enclosed check for \$25 as a slight token of regard for my doctor and all his colleagues. These are my 'dues' as a citizen, and I hope they will help in your fight against socialized medicine."

"A people without guts are soon a nation without guts, and if it should become necessary to remove any part of mine, I want to pick my man and pay his charge without a precinct captain getting his nose in my anatomy."

ULCERATIVE CECITIS WITH INTRAMURAL AND SEROSAL HEMORRHAGES AND ABSCESSSES OF NON-SPECIFIC VARIETY FOLLOWING SUBCUTANEOUS INJURY TO THE ABDOMEN

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REPORT OF CASE

FOLLOWING subcutaneous injury to the abdomen, a 22-year-old white man of Mexican ancestry was admitted to the hospital on March 2, 1948 because of abdominal pain. The patient gave the following history:

While he was chopping wood four days prior to admission, a stick, impelled by the blow of an ax, struck him in the right lower quadrant of the abdomen. He had little pain at the time and regarded the accident lightly. On the following day, however, pain recurred and became persistent and increasingly severe. There was no nausea or vomiting; the patient had no urinary symptoms. His bowel movements remained normal.

Examination on admission revealed a well nourished, well developed, young man of Mexican descent. Physical examination was not remarkable except for pronounced tenderness over McBurney's point. The blood pressure was 110/70 mm. of mercury. Temperature was 100.2, pulse rate 98, respiration 24. The red blood cell count was 4,600,000. The white blood cell count was 9,500. Hemoglobin was 90% and differential count showed neutrophils 81%, lymphocytes 14%, monocytes 5%. The bleeding time was 1½ minutes, coagulation time 5½ minutes. The urinalysis showed specific gravity of 1020, and was negative for albumen and sugar; an occasional sperm was seen in the microscopic study.

The diagnosis of acute appendicitis was made. The possibility of some relationship to the trauma was considered and immediate appendectomy was decided upon. A McBurney muscle-splitting incision was made and when the peritoneum was

encountered free fluid was found. This was thin, brown-gray and not malodorous. The cecum was found in the operative field and on it there was encountered an area which at first appeared to be exudate. This area was near the ileocecal valve and the base of the appendix. Further investigation revealed that it represented an abscess involving the wall of the cecum. There was seepage through the serosa over this area which was about 5 cm. in diameter. It was necessary to resect this lesion and it was possible to free the cecum by cutting its lateral attachment. Using a Furniss clamp, the area to be sacrificed was brought up through the clamp and after applying a clamp distally for protection, the protruding bowel was sacrificed. The part remaining flush with the clamp was treated with phenol and alcohol. Closure was effected over the spit of the clamp using chromic catgut followed by fine silk for a second row of sutures.

Immediate examination of the resected lesion showed a considerable defect in the wall of the cecum which resembled an evacuated abscess. The possibility of amoeboma was considered; however, the lesion lacked granulomatous characteristics. Smears from the interior of this lesion were examined and several cysts were found. They resembled *E. histolytica*, but were not positively identified as such. On the basis of the examination, the patient was given emetin hydrochloride, one-half grain twice a day for seven days. Numerous examinations of the stool were negative; however, on the 15th of March, cysts of *E. histolytica* were found in the stool. At that time the patient was placed on diodiquin, 3.3 grains three times a day. Recovery was uneventful.

The surgical specimen was studied by Leo Kaplan, M. D., Chief, Laboratory Service, Vet-

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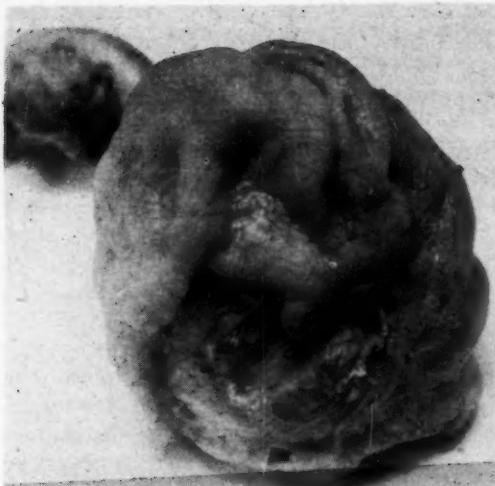


FIGURE I—Gross appearance of resected area of cecum involving abscess as shown from mucosal surface.

erans Administration Center, Los Angeles, California, whose report follows:

"The specimen consists of an irregular segment of the wall of the cecum measuring 7.5 x 4.0 x 1.0 cm. and a bisected appendix measuring 7 cm. in length and approximately 0.8 cm. in diameter. A segment of mesoappendix is attached. The serosal surface of the cecum is coarsely and irregularly folded and indurated. It is generally dull. The colors vary from slate blue to pale tan. A trans-section has previously been made through ulceration of the mucosa. The ulcer measures up to 1.5 cm. in diameter at its mucosal aspect. It penetrates to the serosa

which at this site is covered by friable granular material and which appears to have undergone marked degenerative changes. The walls and floor of the ulcer are dirty grey-white and irregularly granular. The ulcer undermines the superficial layers of the bowel for a variable distance up to approximately 0.5 cm. in its circumference. The mucosa and the rest of the bowel wall are indurated for approximately 1.0 cm. about the ulceration. The serosal surface of the appendix is generally dull and brown, but is transparent throughout. Several minute dilated subserosal granules are apparent. On section the wall is found to be approximate uniform thickness and the lumen of slightly variable diameter but patent throughout.

DIAGNOSES: Ulcerative cecitis with intramural and serosal hemorrhages and abscesses of non-specific variety.

No amoeba observed.

Organizing fibrinopurulent pericecitis and periappendicitis."

SUMMARY AND DISCUSSION

1. A single case of ulcerative cecitis following trauma to the abdomen is presented.
2. Absence of amoeba or cysts in section of the cecum speaks against this protozoan as an etiological agent.
3. It is believed that trauma may have been a factor in the patient's disease and that this case might therefore be considered as one of cecitis following subcutaneous injury of the abdomen.

RECENT PROGRESS IN CANCER

E. PAYNE PALMER, M. D.

Phoenix, Arizona

THE problem of cancer is a challenge to the scientists of the world. The outlook for the solution of the cancer problem is hopeful. Increased funds are being made available for research and a growing body of skilled workers in the field are extending their knowledge with respect to cancer. The ultimate hope of conquering cancer lies in scientific research. In the field of biology, the fundamental problem of cancer is bound up with the factors which control normal and abnormal growth.

Cancer follows no set rules in its lethal growth. Many unpredicted factors may nullify the calculated result of treatment. Probably among these is the inherent susceptibility or resistance of tissues of the individual to cancer derived from his ancestors. The patterns of growth and the spread of cancer in two portions of the same organ are interesting in their extreme divergence.

The research man, confronted by this baffling maze of inter-relationships within the living cell, cannot give up.

He knows that the presence or absence of certain genes controls susceptibility or resistance

Presented before the Tenth Annual Navajo Clinical Conference, Harlow Brooks Memorial, Ganado, Arizona, August 22, 1949.

to malignant growth, and that the hereditary characteristics of a cell can be changed by exposing its nucleus to certain cancer agitator. He knows a virus can also cause the cell to become cancerous and that, strangely, the virus greatly resembles the nucleus of the cell.

He knows that production of enzymes within the cell is controlled by the genes. He also knows that when the gene is changed by a cancer irritant one result is partial destruction of the enzyme production capacity that the gene transmits to its offspring. Somewhere within this closed circle of the cell's processes lies the explanation of why a normal cell turns cancerous and grows wildly. The question, is where?

Clinical research in cancer has been and is still being handicapped by the fact that there are not enough fundamental scientists with a knowledge of the physical, chemical and biological factors which govern the basic phenomena of cell growth. Researchers are now going to produce basic knowledge which may be applied through clinical research in developing better means of early diagnosis and appropriate treatment. Herein, lies the only hope of cure in cancer.

Research has already made significant contributions to progress against cancer. These include the first known test for a form of cancer, a hormone suppression treatment for breast and prostatic cancer, the nitrogen mustard treatment for Hodgkin's Disease and lymphocytic leukemia and the operation technique for cancer of the esophagus and pancreas. Castration therapy and the administration of the female and male hormones all have a place in the treatment of advanced cancer.

There have been some recent changes in the tests for cancer which will make it much more simple. I have no personal knowledge of these tests other than the information which I have obtained from literature, so I feel that it is best to stop here.

Taylor and his associates observed the effects of estrogenic substances in the last eighteen months on 42 patients with advanced inoperable cancer of the breast. They selected 29 patients with advanced cancer of the breast for androgen therapy. In this group there were more patients of younger age and more with osseous metastases than in the group given estrogens; included here, too, were patients who

showed a poor response to estrogens. It was found that diethylstilbestrol and ethinyl estradiol produced regression in primary lesions and in soft tissue metastases of cancer of the female breast and apparent inhibition of osseous metastases in certain cases. These effects were found in no more than half the patients treated. Age was the only clearly determined factor influencing the response of these patients to estrogens. The most satisfactory results are obtained in patients more than 60 years of age. Apparent acceleration of tumor growth was occasionally produced by estrogens in younger patients, less often in older ones. Androgens produced reduction in soft tissue, as well as in osseous metastases in some cases. The response to androgens is similar to that of estrogens, except that androgens are effective in both younger and older age groups, whereas estrogens may more frequently cause acceleration of growth in the younger age group. Some patients seem to respond equally well to either drug, while others respond to neither. Androgens also occasionally produce acceleration of tumor growth. Androgens controlled the pain and produced recalcification of osseous metastases more efficiently than estrogens. Neither estrogens nor androgens produced a permanent control of metastatic breast cancer.

Researchers first discovered that in dogs the development and function of the prostate gland were to a great extent governed by the male sex hormone. The same was found true in men. Next it was learned that castration or elimination of the male sex hormone, brought immediate relief from pain, improvement of appetite and a gain in weight for most prostatic cancer patients. Then it was found the same results could be attained by administration of the female sex hormone. Complete cure has not been the rule but a significant number of men has remained free of symptoms for five years. In prostatic cancer the effect of estrogenic substances and the androgens are very similar to the results obtained in the breast cancer. Neither estrogens nor androgens produce a permanent control of metastatic prostatic cancer.

Although the research program is necessarily focused on the prevention and cure of cancer, the advanced cancer patient has not been neglected.

Physicians have long relied on morphine, which is very effective, for relief from severe

and continued pain. But this drug may produce nausea, mental dullness and other side effects; further, the patient may develop tolerance, requiring increased dosage. One drug, methadon has proved especially valuable in hopeless cancer cases. It can be given by mouth instead of by injection, and it appears equal or superior to morphine in relieving pain. Unpleasant side effects are less and tolerance develops more slowly.

Surgical treatment and irradiation, singly or in combination, still must be considered the primary forms of treatment, steroid hormone therapy being reserved only for those cases in which orthodox methods cannot be applied or have proved unsuccessful.

This last point is of considerable importance, and the usefulness of properly administered roentgen irradiation and operation should not be overlooked in the present period of steroid research. Roentgen irradiation in the control or palliative treatment of inoperable breast cancer, and of recurrences or metastases, is of well established usefulness. Its employment in the treatment of inoperable primary lesion, local recurrences, regional lymph node metastases, most cases of bone metastases and selected cases of pulmonary, cerebral and other metastases will usually alleviate symptoms and prolong life. The side effects of irradiation, properly administered, are usually fewer and less severe than those of steroid therapy, at least up to the present date. Steroid therapy should, the participating investigators believe, be reserved, in everyday clinical practice, for patients in whom the possibilities of adequate surgical treatment and careful roentgen irradiation have been first fully utilized and have given clear evidence of being no longer of benefit. Use in this sequence is suggested as being the most logical method in the light of present information. The fact that steroid hormones do produce changes provides a hitherto unavailable tool for the study of the growth and regression of cancer cells.

One of the most hopeful advances of cancer research was the proof that nitrogen mustard, although not a cure, had a retarding effect upon cancer. Nitrogen mustard was developed originally as a military poison gas and is a most interesting cystotoxin. It neutralizes the disease producing power of viruses, halts cell division and retards or alters embryonic development. It has shown some promise in Hodgkin's

disease and leukemia, but has not proven as effective as has x-ray treatment.

In acute leukemias, no consistent clinical remissions were seen after the administration of nitrogen mustard, but occasional temporary systematic relief occurred from nitrogen mustard therapy. In chronic lymphocytic leukemia results are difficult to predict. In general, those with far advanced disease responded poorly.

Karnofsky and associates have obtained in the course of their study of the effects of the nitrogen mustards on various types of neoplastic disease, a remarkable temporary remission in a patient with an anaplastic cancer of the lung. This observation prompted the more extensive trial of the nitrogen mustards in primary lung cancer. Methyl-bis (beta-chloroethyl) amine hydrochloride (HN_2), a nitrogen mustard, was used in the treatment of 35 patients with inoperable cancer of the lung. In nearly three-fourths of the patients some clinical improvement occurred. This was evidenced by an alleviation in symptoms such as cough, dyspnea, hemoptysis, pain, weakness, and the syndrome associated with obstruction to the superior vena cava and by such objective changes as regression of pulmonary and metastatic lesions and absorption of pleural effusions. The improvement usually lasted from two weeks to two months, and further courses of the drug were usually not as effective as the first. In the rapidly growing, anaplastic lung cancer, the nitrogen mustard frequently alleviated symptoms and appeared to interrupt the course of the disease briefly; here it may be more effective and sometimes less hazardous than roentgen therapy.

Some clinical improvement was produced also in the more slowly progressing lung tumors, but in these conditions, particularly in the early stages, roentgen therapy may alleviate symptoms for long periods. It is suggested that nitrogen mustard may occasionally be effective as an adjuvant to roentgen therapy in the palliative management of lung cancer. In one patient with a recurrent pleural effusion caused by metastases to the pleura, the intrapleural injection of HN_2 prevented further formation of fluid. Of 18 patients presenting a miscellaneous group of tumors—the use of HN_2 caused brief clinical improvement in two with metastatic cancer of the prostate no longer responding to hormonal therapy and in one patient each with carcinomatosis from a gastric cancer, metastatic seminoma,

carcinomatosis from adenocarcinoma of the uterus, neurogenic sarcoma and neuroblastoma.

The cystological method as an aid in the diagnosis of cancer has been discussed widely and has been recommended as a routine test in a gynecological examination. Slides taken from patients with degenerating cervical polyps has sometimes presented a confusing picture. The cells seen in these slides show marked distortion of cervical cells, which may be shed in numbers, occasionally there will be bizarre nuclei that may also be hyperchromatic. Slides from patients with pelvic inflammatory disease might be difficult to evaluate because they show cells that are not only bizarre, but at times suggest cancer. Estrogen effect can present a confusing picture, especially when the examiner of the slides does not know that the patient has been taking estrogen.

The presence of endometrial cells on a slide received from a patient past the menopause is, in itself, an abnormal finding. Hyperplasia, of the endometrium, especially one induced by prolonged estrogen therapy, will at times give rise to shedding of endometrial cells with nuclei of different size and staining quality, hyperchromotosis, as well as vacuolization—characteristics that will make distinction from endometrial cells obtained from adenocarcinoma difficult at times. However, close and detailed examination of these slides will usually lead to the correct interpretation.

The changes that are obtained in cells after irradiation especially soon after the event of irradiation, might cause a difficult differential diagnosis. A case that has been followed at regular intervals after radiation therapy in which cystological examinations show no malignant cell changes for a while, and then malignant cells appear, rarely present a cystological problem. But the isolated slide from a patient who has recently received radiation therapy, in whom the cell population before irradiation is unknown, and in whom the gradual changes after irradiation have not been observed, may be difficult to interpret. It has been shown that cancer of the female genital tract can be found with the cystological method. It has also proved valuable to the practicing physician, who, by obtaining routine slides made from vaginal or cervical secretions, has his attention called to the existence of early clinically unrecognizable cancer.

The cystological method must not be depended upon in the diagnosis of cancer, it is a distinct aid in the diagnosis of cancer, but not as one that replaces histological methods. A negative smear is not an absolute proof that cancer is not present. On the other hand, a positive vaginal smear should only lead to a thorough investigation, not to immediate therapy. It should be emphasized, that the cystological interpretation should not be used as the only diagnosis and that a histological examination and diagnosis must be made before treatment is instituted for cancer of the uterus.

Sponge biopsy, a new method involving the use of sponges in the collection and preparation of tissue for microscopic examination, is applicable in the study of accessible ulcerative lesions or mucous membranes that may be reached by the sponge. The method was applied with additional tissue for comparative study and made available by surgical biopsy, surgical specimen or post-mortem examination. With respect to accuracy and reliability of results, the method of sponge biopsy closely approximates that of surgical biopsy.

Woolner and McDonald examined sputum or bronchial secretions for cancer cells from a total of 1,600 patients. In 150 of these the results were positive. Sputum was examined while fresh or it was collected in a few cubic centimeters of 95 per cent alcohol. Five smears were made from each specimen. The smears were fixed, while wet, in equal parts of absolute alcohol and ether for thirty minutes. The staining method adopted was Harris' hematoxylin followed by dilute eosin as a counterstain. Cancer cells in smears could be distinguished from normal cells by numerous atypical characteristics including large size, variation in size and shape of the cells and of the nucleus, the nuclear-cytoplasmic ratio, hyperchromatism of the nucleus and the presence of large nucleoli. The appearance of cancer cells in sputum and bronchial secretions varies with the histologic type of tumor in the bronchus. Cancer cells originating in a bronchogenic cancer of small cell "oat-cell" type or in a keratinizing squamous cell type provide the most distinctive morphologic characteristics. In the more undifferentiated tumors, a diagnosis of "cancer cells present" was made without reference to histologic type. In 146 of the 150 cases the source of the atypical cells was believed to be a tumor in the bronchial tree. In 141 of the

146 cases a final diagnosis of cancer of the lung was made. In three cases diagnoses made on the basis of smears were proved to be false positive. In two cases the final diagnosis was not definitely established. Cancer cells in sputum or bronchial secretions provided the only preoperative microscopic evidence of cancer in 25 of a total of 58 cases in this series, in which surgical exploration was carried out. Of 24 cases of bronchogenic cancer in which the lesion could be removed, cancer cells in the smears provided the only microscopic evidence of cancer in nine cases.

Differential diagnosis of breast tumors by physical examination is a commonly difficult clinical problem and it is frequently impossible to arrive at a definite diagnosis without a biopsy. This is particularly true in the case of early lesions, which are now seen more frequently owing to the current cancer educational campaign.

Because of the greater number of breast tumors seen in their early stage when physical signs are not yet well developed, an increasing proportion of our cases must be scheduled in the operating room for local excision and frozen section diagnosis. It is imperative that we obtain microscopical proof of cancer by formal surgical biopsy or aspiration prior to performing radical mastectomy.

The majority of benign and malignant lesion of the breast lend themselves readily to gross or microscopic identification. However, it is apparent that many pathologists still confuse the process that we designate by the term, "sclerosing adenosis" or "sclerosing adenomotosis" with cancer of the breast. Ewing was quite correct in his statement that sclerosing adenosis constituted the one benign breast lesion most often mistaken for mammary cancer. Unquestionably, in the statistics of cured cancer cases, there are many inclusions of this lesion, which results in a higher percentage of curability than is valid for true breast cancer.

Sclerosing adenosis is a specific benign breast lesion not infrequently erroneously diagnosed as mammary cancer. Sclerosing adenosis rarely occurs as a localized, palpable mass. The consistency is usually less rubbery than that of fibroadenoma and less firm than that of mammary cancer. The tumors exhibit nodularity of varying coarseness. They are distinct but not definitely encapsulated. At its periphery the lesion is usually noninfiltrating in appearance, but

some specimens may be confusing in this respect. A characteristic finding on gross examination is definite tabulation that may vary from a millimeter to more than a centimeter in diameter.

These lobules usually occur in contiguity but may merge or be separated from one another. The lobulated surface customarily projects slightly. But when lobulation and circumscription are not clear, and if chalky streaks and undue firmness are added, one is very apt to get a gross impression of mammary cancer.

Physical examination revealed inconstant findings. Some are freely movable and others are somewhat fixed. Some are diffuse and others are more discreet in outline. Some are of a rubbery consistency while others are quite firm. It is obvious that accurate clinical diagnosis of sclerosing adenosis is impossible when one considers the diverse signs and symptoms found in such cases. Differential diagnosis must be made on pathological grounds. Although, as has been stated, the gross appearance of the lesion is usually quite typical. In exceptional cases, we must depend entirely upon frozen section examination and decision may be very difficult. The greatest importance of sclerosing adenosis lies in its occasional misinterpretation and the rendering of an erroneous diagnosis of cancer. Biopsy examination of all breast tumors prior to radical surgery is imperative.

CONCLUSIONS

We are making some progress in the advancement of cancer, so the outlook for the solution of the cancer problem is hopeful. The ultimate hope of conquering cancer lies in scientific research. Research has already made significant contributions to progress against cancer. Much work is being done in advanced cancer, with the administration of estrogens and androgens. While some temporary improvement has been noted after the administration of these substances, neither estrogens nor androgens produce a permanent control of metastatic breast or prostatic cancer. Nitrogen mustard has some retarding effect upon Hodgkin's disease and leukemia, but has not proven as effective as irradiation. There has been a remarkable temporary remission in patients with anaplastic cancer of the lungs. Surgical treatment and irradiation, singly or in combination, still must be considered the primary forms of treatment for cancer.

Estrogens and androgens are being reserved only for those cases in which the orthodox methods cannot be applied or have proved unsuccessful. The cystologic method is a distinct aid in diagnosis of cancer and is strongly recommended, but not as one that replaces histological methods. The diagnosis should be confirmed before treatment is instituted for cancer. Sponge biopsy is applicable in the study of accessible ulceration lesions or mucous membrane that may be touched by the sponge—it closely approximates that of surgical biopsy. Sclerosing

adenosis is a specific benign lesion of the breast, not infrequently erroneously diagnosed as breast cancer. Differential diagnosis must be made on pathological grounds. Biopsy examination of all breast tumors prior to radical surgery is imperative.

I have worked with the cancer problems for a half century and have seen remarkable progress during that time. Many years may elapse before the mystery of cancer growth is completely solved. Fortunately, great improvements in prevention and treatment need not wait.

MAGNETIC INTRA-OCULAR FOREIGN BODIES

A. E. CRUTHIRDS, M. D.
Phoenix, Arizona

WHEN a patient presents himself with a history of experiencing a sharp pain in the eye while hammering or manipulating metal of any kind, we must realize that here is a major ophthalmic problem. A brief history and a thorough eye examination is indicated, keeping in mind that about 60% of intra-ocular foreign bodies are steel, that 72% of foreign bodies enter the eye through the cornea, and that 82% of intra-ocular foreign bodies are found in the posterior chamber of the eye.

The important points in the history are:

1. Time of accident—if gotten within a few hours, then foreign body is easily extracted. If after a few days to a week, foreign body may be embedded in exudate and difficult to remove.
2. Type of metal handled—if it is ordinary iron or carbon steel, it is easily extracted, but if copper, lead, zinc, aluminum, glass or plastic, it is not so easily extracted.
3. Distance and possible angle of origin of foreign body — how far away — must be learned.
4. If not a severe injury, we test vision and near distance.

EYE EXAMINATION

Examination of eye should include:

- a. Slit lamp examination and staining with fluorescein the cornea and conjunctiva to detect point of entrance. Both Bowman's Membrane and Descemet's Membrane should be examined for injury.
- b. Anterior chamber should be studied for blood cells; however, blood in the anterior chamber can come after contusion of the eyeball.

e. Tension should be taken as there is generally loss of tension in penetration cases.

SCOUT X-RAY FOR DETECTION ONLY

The next move is an A-P and Lateral x-ray—a preliminary test with a hand or giant magnet or Berman Locator is made to determine if there is a magnet response, after which patient is sent for x-ray localization. There are about 30 different methods of localization of foreign body varying in detail. I shall briefly discuss other aids in foreign body localization with the object in mind of obtaining a pin-point localization. The localization must be meticulously accurate because it is upon this localization, size, shape, and quality of the foreign body that we base our judgment of whether to use the anterior or posterior route of extraction.

BERMAN LOCATOR

One of the most useful tools for accurate foreign body localizing developed during the war and used successfully at Pearl Harbor is the Berman Locator which gives a shrill audible and a visible dial signal when the magnetic finder is near the foreign body.

TYPICAL LOCATOR CASE

A surgeon reports a case where patient was struck in the eye by a fragment from a hammer. X-ray was negative for foreign body. The Berman Locator was applied and it indicated the foreign body 8 mm. posterior to lower margin of cornea. A thin flake-like particle 2 x 2 mm. was removed by hand magnet through scleral incision and eye saved.

1. Foreign body in neck may be localized.
2. Broken needles after T. and A. located.

The Berman Locator is a valuable aid in removal of intra-ocular foreign body and affords definite information as to position of particle at all stages of operation.

If trans-scleral removal is chosen, one may determine before making incision if object can be drawn to a site of election in the so-called silent area between ciliary body and ora serrata 5.5 to 8 mm. behind the limbus. If the foreign body is fixed to the sclera and can't be moved by magnet, then the exact point for incision can be pointed out avoiding traumatizing exploration.

The Berman detector causes no movement of the foreign body as compared with the magnet testing which may change the localization position. Some non-magnetic foreign body like copper and brass may be located with it. It tells you the point of sclera nearest foreign body and hence site in most instances for incision.

USE OF BERMAN LOCATOR

Devised by Mr. Samuel Berman of the electrical engineering department of N. Y. C. Transit System for Dr. John J. Morehead, who recognized the need for an operating room instrument to supplement x-ray localization of embedder foreign body which proves elusive and difficult to find, however accurate the x-ray localization may be. The Berman Locator becomes actuated by fragments of iron, steel, copper, silver, aluminum, lead and their combination. Soft iron and ordinary carbon steel is most responsive—alloy steel less responsive. Certain stainless steel alloys are non-magnetic—no response:

Common Iron and Steel

Approximate distance of detection from bare element (with shield—rubber).

Dia. of Mass		2½ mm.	3 to 7	greater than 7
¼ mm.	.....	2½ mm.	3	.....
1 mm.	.....	10 mm.	6	.....
3 mm.	.....	30 mm.	11 to 16	.....
Ordinary steel needle	.....	2 in.		
3 in. iron nail	.....	4 in.		

Non-magnetic metals (copper, brass, aluminum, lead, etc.) response is relatively low and not always helpful.

.45 caliber lead bullet	.....	¾ mm.
.22 caliber lead bullet	.....	⅛ mm.
Copper 1c piece	.....	1 inch

BERMAN POINTS IN BERMAN LOCATOR TECHNIQUE

1. Magnet must be kept six feet away or it will magnetize the probe and cause sudden reduction to sensitivity.
2. Have Locator Assistant help doctor put sterile rubber cover on probe in operating room.
3. Operating table should be wood or pillows or sand bags 15 inches high under patient.
4. All towel clips should be 5 inches from field retractor to be non-magnetic.
5. Always shield probe tip.

MAGNETS—HAND AND GIANT

Our supreme aim in intra-ocular foreign body extraction is removal of foreign body with the minimum amount of trauma using the weakest magnetic force which will remove the foreign body. In addition to the hand magnets we have the powerful giant electro-magnets of Haab, Lancaster, and oval shaped magnet of Mellinger. It is the interior route where the giant magnet finds its most usefulness. Quite frequently the hand magnet will suffice in posterior foreign body extraction.

The work done by Struble (reported in 1946 in O. and O.) is shown in the following three slides and gives us experimental data as to what distances various sized particles could be drawn through the vitreous and through the Uvea and out of the scleral incision. Particles of steel shavings, 1, ½ and ¼ mm. were used because they were the size most encountered clinically.

Steel Fragment	Certain Zone I Dist. in MM.	Critical Zone II Dist. in MM.	Failure Zone III Dist. in MM.
¼ mm.	3	3 to 7	greater than 7
½ mm.	6	6 to 11	greater than 11
1 mm.	11	11 to 16	greater than 16

This of course is posterior route extraction in the pars planus 8 mm.; from limbus, and is a further argument for precise pin point localization. The loss of power by increasing the distance from the magnet to the foreign body is equal to the cube of that distance. So if the pulling power of a magnet at 1 mm. is—say 1 gram—thus by increasing the distance to 2 mm. the pulling power becomes ¼ gram; at 3 mm. distance 1/27 gram; 4 mm. 1/64 gram, etc. The larger the foreign body, the more magnetic lines reach it and the stronger the pull.

Now as to the controversial question of removal of foreign body through posterior route or

anterior route. Shall the foreign body be taken out through the scleral coat, (presuming the foreign body lies behind the iris-ciliary body) or shall it be coaxed around the suspensory ligament of the lens and into the anterior chamber of the eye through the pupillary aperture and there removed by a clean incision in the anterior chamber. Dr. Edmund Spaeth, Will's Hospital, Philadelphia, Pa., says there is not the slightest doubt whatsoever that the posterior route surgery results in the highest percentage of lost eyes. The anterior route results in a considerably higher percentage of successful operations and successful extractions.

However, there are certain situations where the posterior route may or must be used and also situations where the anterior route may or must be used. The smaller the particle—the anterior route is used. The larger the particle—the posterior route is used or permitted—one must stay behind equator with posterior sclerotomy. One must avoid large vortex veins. Sclera must be sutured after posterior sclerotomy.

The matter of retinal detachment following posterior route extraction is a most serious subject. This is a most common complication following posterior route extraction. The magnet tip should never be introduced into the eye.

RETINAL SEPARATION

In posterior route retinal separation offers little hope of cure in comparison to other retinal separation cases presumably because normal vitreous actually separates retina from choroid.

Danger of sympathetic ophthalmia is slightly up in posterior route cases. There is a limit of safety for sympathetic ophthalmia. All eyes that eventually will come to enucleation should be enucleated before the dead line of 12 days.

Now as to the anterior route, the magnet tip is to be started as far posteriorly as is possible. Then with the magnet field closed, the foreign body will pass to that magnet field by its shortest possible route. Then as the magnet is carried forward, the foreign body should pass through the suspensory ligament of the lens into the posterior chamber of the eye. From there it can be coaxed around the iris on its posterior surface through the pupillary aperture and into the angle of anterior chamber—to be then removed by the hand magnet after making a corneal incision. If the foreign body is caught bad-

ly in the iris, iridectomy should be made and foreign body extracted with hand magnet.

Another method of differentiating intra- from extra-ocular foreign body is the use of air or oxygen in Tenon's Capsule. 6 c.c. air or oxygen is injected into capsule of Tenon. It is diagnostic but hazardous if operation is performed soon after injection is made where anterior chamber has to be opened as the air in Tenon's Capsule exerts pressure causing loss of vitreous and iris prolapse.

We may use the following in anterior chamber:

Air—3-4 days absorption

CO_2 —too rapid absorption to be practical

O_2 —best 4 to 8 hours before there is complete absorption.

TECHNIQUE

Use curved 25 needle 10 c.c. syringe, have eye look down and in, needle inserted 6 mm. behind limbus, needle goes subconjunctively few mm. first in outer upper quadrant of eye. (Spackman.)

REACTION OF STEEL AND COPPER IN EYE

It is well known that the retention of steel in the eye means loss of that eye due to siderosis. Reaction to copper depends on whether it is in pure or in alloy, poor in copper. Due to the fact that Arizona is a copper producing state, we see copper-bearing ore particles in eyes more so here than elsewhere. Copper in pure form sets up a violent inflammation, but causes a copper plating of the eye, causing typical lens effect—sunflower cataract.

After care of intra-ocular foreign body should be the use of the sulfas, antibiotics, foreign protein therapy.

REPORT HISTORY OF HENRY BREIDENBACK

On March 13, 1949, while driving a steel wedge with steel ax, foreign body struck in the right eye. Patient went to doctor but no foreign body was found and patient returned to work. Patient came to see me one month later. X-ray showed two foreign bodies, one in the lid and one as shown by localization to be lower nasal quadrant, right eye, near ora serrata and in exudate visible with ophthalmoscope. After several localizations, giant magnet was used and foreign body brought through suspensory ligament of lens around iris and into anterior cham-

ber and then removed by hand magnet. Examination showed some dis-insertion in area of foreign body removed. Sent to St. Joseph's Hospital and re-attachment operation was performed. Patient sees 20/20 for distance and Jaeger J.

SUMMARY

I have briefly mentioned means of magnetic diagnosis of intra-ocular foreign body, the different routes of removal and outlined briefly a case in St. Joseph's Hospital.

Pin point accurate localization is of utmost

importance to avoid unnecessary trauma in removal of intra-ocular foreign body.

The hand and giant magnet each have their indicated field and the Berman Locator should be used to supplement x-ray localization and as a ready guide in extraction of intra-ocular foreign body.

Every patient presenting himself with sudden pain in eye or discomfort in any form following hammering or manipulating metals should have an x-ray. Even though it is negative, it is good evidence later on that this precaution was taken.

THE ANNUAL MEETING

The Fifty-ninth Annual Meeting of the Arizona Medical Association will be held at the Westward Ho Hotel in Phoenix on April 30-May 1, 2 and 3.

The Program has been completed. Guest speakers will be Doctors John M. Waugh of Rochester, Minnesota; Stephen R. Elek of Los Angeles, California; Harry B. Macey of Temple, Texas, and George C. Griffith of Pasadena, California.

In addition to the guest speakers approximately fifteen papers will be presented by members of the State Association.

Following the new arrangement which was started last year, the Meeting will begin on Sun-

day, April 30. There will be entertainment and golf Sunday afternoon. The Council will hold its first session Sunday afternoon.

The House of Delegates will meet Monday morning and Wednesday morning. Monday afternoon will be given over to the various specialties for sectional meetings. The Opening Exercises and the first scientific meeting will be held on Monday night. The President's Dinner-Dance will be on Tuesday evening.

On Sunday evening the Annual Meeting of the Blue Shield Corporation will be held at the Westward Ho. The Corporation consists of the members of the Council, the House of Delegates, the Board of Directors and officers of Blue Shield.



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Journal of

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Editorials

The Rabies Problem

The problem of *rabies* is not peculiar to Arizona but it is of considerable concern. The hazard to humans from rabid dogs is intensified in certain areas of the state by the contact between dogs and the reservoir of desert animals.

The U. S. Public Health Service believes that the disease can be eliminated, though some authors question the value of the current Pasteur treatment.

About a half million Americans are bitten by dogs each year. Between 30 and 40 thousand individuals are required to take the anti-rabies vaccine. The disease kills from 35 to 50 persons per year. The vaccine causes CNS paralysis in seven or eight of those who take it.

Veterinarians urge the licensing of all dogs; an annual vaccination; impounding and destruction of all strays; quarantine of dogs during a local outbreak; and a trapping program for wild animals.

Dogs may develop the "furious" type of disease with a gregarious, active, vicious conduct lasting a week or so; biting is the method which produces infection from this type. The "dumb" rabies lasts two or three days, is characterized by melancholy, sleepiness, and paralysis, and

infection may result from inoculation of saliva into breaks in the skin, when the owner tries to examine or feed the poor beast.

The Arizona attitude conforms to the general practices toward animals and bitten humans.

Dr. Ward of the Arizona State D. of H. believes that vaccination of animals is valuable, though the vaccine is not a perfect one.

Dr. Lewis Howard, health officer of Tucson, goes along with the one-injection prophylaxis for dogs, but is skeptical about the Pasteur treatment for humans—though it prevents worry.

An animal bite should be cleansed with green soap and water, and with an antiseptic. No one has died from rabies or vaccination in Arizona this past year. The dog population is not quarantined at present.

There is a report that an improved vaccine is being sought, and that success is not too remote a possibility.

The Medical Advisory Board

When the late Dr. B. B. Moeur of Tempe was elected Governor of Arizona in 1934 he appointed Dr. Ralph F. Palmer as Medical Director of the State Industrial Commission. A very constructive plan came into operation in the early months of their administration when the Industrial Relations Committee was originated. This committee was set up to consist of four physicians from over the state to be appointed each year by the in-coming president of the Medical Association, with the idea that they would represent the various specialties most likely to be interested in industrial accidents. The president and secretary of the State Association are ex-officio members of the committee. The six physicians and the members of the State Industrial Commission comprise the Industrial Relations Committee. The function of this Committee is to act as a liaison group between the members of the medical profession and the Industrial Commission. The committee has met as often as once a month to handle the various problems which arise pertaining to the disposal of various methods of practice, the adjustment of fees charged which are out of line with the service rendered and the regular fee schedule, the interpretation of the Industrial Law and innumerable routine matters which require medical and legal adjustment. And out of this Industrial Relations Committee has come the Medical Ad-

visory Board, which consists of the four physicians who are appointed each year by the president of the Medical Association. This Medical Advisory Board meets the first Monday of each month, the year around, in the Central Office in Phoenix, and acts as a consulting board for the many cases of injury which have reached the stationary period and the degree of disability must be decided upon and awards made. Many other types of cases are reviewed which require advice as to proper diagnosis, consideration of new and additional evidence of injury, and for final recommendation to the Commission.

Elsewhere in this issue is a report of an Industrial case which reached the State Supreme Court for final settlement and the findings and award made by the Medical Advisory Board were upheld by the Supreme Court. The Court went so far as to approve the work of such a board. It was the contention of the court that such a board would be more able to render an unbiased opinion than any other conceivable method in their knowledge.

Communication
TREASURY DEPARTMENT
BUREAU OF CUSTOMS

Nogales, Arizona

December 28, 1949

Dr. Frank J. Milloy
 Secretary, Arizona Medical Association
 642 Security Building
 Phoenix, Arizona.

Dear Dr. Milloy:

In recent months there has been an increase in the number of cases where it was necessary for this office to seize narcotic drugs which were being imported by doctors of medicine licensed to practice in Arizona, who were returning from visits in Mexico.

These narcotic drugs are carried in medicine kits or baggage by the doctors at the time they leave the United States, at which time their baggage is not inspected. Consequently, it is not until they return that they realize or discover that the drugs have to be seized. There is no intent on their part to violate any law, and in many cases the narcotic drugs are included in their effects in order to meet any emergency that they may run into during their journey.

In many instances the doctor involved lives in

some other state, but there have also been several cases involving doctors practicing in Arizona.

It occurs to this office that the loss of these drugs and embarrassment on the part of the doctor involved, as well as to this office, would be, at least to some extent, avoided if the restrictions on the exportation and importation of narcotic drugs by doctors of medicine, as well as others, were brought to the attention of the medical profession. Under the law the exportation and importation of narcotic drugs in any manner and by any person is prohibited except under an export or an import license issued by the Narcotics Control Board.

This office will appreciate any steps which you may take to disseminate this information to the medical profession, especially in Arizona.

Very truly yours,

Signed

Craig Pottinger,
 Collector of Customs.

RESOLUTION

The House of Delegates took some very important actions with regard to certain bills pending before Congress, and we have advised the Congressmen to this effect. There follows a copy of the material we sent them. You should supplement this by communicating appropriately with your Senator and Representative, especially if either of them happens to be a member of any of the committees concerned.

* * *

RESOLUTION ON SENATE BILL 1411
 (Presented to House of Delegates, American Medical Association, at Washington, D. C., December 6, 1949)

WHEREAS, The House of Delegates of the American Medical Association at the last session adopted a resolution opposing Senate Bill 1411, known as the School Health Services Act; therefore be it

RESOLVED, That the House of Delegates now in session reaffirms its opposition to Senate Bill 1411 and instructs the Board of Trustees to implement the opposition to this legislation by appropriate information to the component societies.

**ACTION OF HOUSE OF DELEGATES ON
 RESOLUTION ON SENATE BILL 1411**

The House of Delegates took the following action with reference to S. 1411:

We recommend that this bill in its present form be opposed. On page 6 of the printed bill, Section 6 (a) (1) there are three provisions,

(A), (B) and (C). (A) provides for periodic medical and dental examination of school children; (B) provides that, where indicated, treatment shall be provided "whenever the parents of such children are unable to provide treatment," and these sections are acceptable. Section (C), which permits schools to provide treatment for *all* school children, is an unwise provision and makes it necessary to oppose S. 1411.

NOTICE

The University of Pennsylvania Medical Alumni Society will hold a dinner meeting Wednesday, June 28, 1950 at the Fairmont Hotel in San Francisco, in connection with the convention of the American Medical Association. Cocktails 6:30 p. m. (cash-bar), dinner at 7:30 p. m. All alumni attending the convention are urged to come to the dinner.

PHOENIX CLINICAL CLUB

Massachusetts General Hospital

Case Record No. 31031

December 5, 1949

A twenty-nine-year-old woman was admitted to the hospital complaining of a chronic productive cough and abdominal pain.

Twelve years prior to admission the patient began to suffer with chronic cough. This was often accompanied with fever and was productive at times of as much as a cupful of mucopurulent, foul-smelling sputum a day. The sputum was never blood streaked until a year before entry, when flecks of blood were first noted. The cough and streaking became increasingly severe and were associated with vomiting, often at the end of a paroxysm. On several occasions she vomited intractably for several days at a time. On two occasions she was said to have vomited blood, although at no time did the vomitus have a coffee-grounds appearance. About six months prior to entry a bronchoscopy and lipiodol study were performed, following which she felt better for a few weeks. The blood streaking of the sputum increased, however, until it occurred daily and was most marked in the morning. About three weeks prior to admission she became so exhausted that she was forced to remain in bed; the slightest exertion often induced a severe paroxysm of coughing followed by vomiting. She was able to retain little food, and the tongue and mouth became sore. She had lost about 16 pounds during the year before entry. Five days before admission she developed severe pain under the costal margin in the right upper quadrant, radiating to the epigastrium but not to the back. The pain occurred intermittently in attacks of jaundice. She was admitted to the hospital for study.

The patient had been married for three years but had been unable to become pregnant. She had been a heavy smoker but had cut down considerably in the few months prior to admission.

Physical examination revealed a well-developed and well-nourished woman who did not appear particularly ill. The tongue was beefy red and moderately smooth. The mouth contained numerous small ulcers on the mucous membranes. The lungs revealed only a few

medium moist rales at the bases. The heart was negative. There were considerable tenderness and muscle spasm in the right upper quadrant. A tender mass, believed to be the liver, was palpable in this area, extending down almost to the level of the umbilicus; no definite edge could be felt. The spleen was not palpable. There was a lack of precise differentiation between sharp and dull sensations in the lower legs, and some questionable loss of position sense. Vibration sense was diminished in the left lower leg. The deep tendon reflexes were present but the ankle jerks were weak. The plantar responses were not elicited.

The temperature was 99.4°F., the pulse 100, and the respirations 24. The blood pressure was 120 systolic, 80 diastolic.

Examination of the blood showed a white-cell count of 11,200 with 93 per cent neutrophils, 4 per cent monocytes and 3 per cent eosinophils. The hemoglobin was 11.8 gm. The urine had a specific gravity of 1.028, with a two plus test for albumin; the sediment contained a few red cells, 15 white cells and a rare granular cast per high-power field. The stools were brown, and a guaiac test was negative. The serum non-protein nitrogen was 23 mg. per 100 c.c., the sugar 78 mg., the protein 6.4 gm. and the chloride 94 milliequiv. per liter. The van den Bergh reaction was normal. The prothrombin time was 24 seconds (normal, 18 to 20 seconds). A bromsulfalein test showed 40 per cent retention of dye in forty-five minutes.

A roentgenogram of the chest was within normal limits. A gastrointestinal series revealed displacement of the stomach to the left and downward displacement of the hepatic flexure of the colon, but was otherwise negative. The lower border of the liver was not well demonstrated. An intravenous pyelogram revealed only a low right kidney. A Graham test was negative.

The patient was given numerous infusions of dextrose in saline together with Vitamin B complex, haliver oil capsules and hykinone. The

white-cell count rose to 25,600, with 79 per cent neutrophils, 11 per cent lymphocytes, 8 per cent monocytes and 2 per cent eosinophils.

On the nineteenth hospital day a laparotomy was performed.

DISCUSSION

Dr. O. O. Williams:

The protocol on the case of this 29-year-old woman presents many problems of contradiction, omission, and perhaps one of commission. The contradictory statements can be summarized as follows: This patient was stated to be well nourished, yet there was a sixteen-pound loss of weight during the last year. There was likewise considerable vomiting and perhaps a lack of intake of fluid. It seems rather obvious that this patient, if well nourished, was rather obese in the early stages of the disease or had taken a fairly high caloric type of diet which did not, however, supply sufficient amounts of the essential nutrition to prevent a vitamin deficiency. Second, there are symptoms and signs of a fairly severe bronchiectasis, though in the x-ray findings nothing was found to substantiate a diagnosis of bronchiectasis. Thirdly, in the physical examination, the patient was stated not to be particularly ill, though her temperature and pulse were slightly elevated and there was a blood count present on two occasions which suggested infection. This indicated that she was considerably sicker than the examiner felt she was.

The sins of omission are the omitted data or the findings of the bronchoscopic examination both by the examiner and by x-ray following lipiodal. In addition there is at no time a red cell count given though the patient was obviously anemic, and thirdly there is no serology reported at any place in the protocol. There are probably other laboratory examinations and perhaps physical findings which were omitted either by not being done or not being included in the protocol. The sin of commission may have been the operative procedure but this will have to wait for the operative findings and the pathological discussion of the pathologist.

It seems to be quite obvious that this patient has had a bronchiectasis since 17 years of age. This is highly suggestive of a congenital bronchiectasis, particularly since no history of a preceding acute pneumonitis was given. Also fairly typical of a bronchiectasis is the fact that the patient received considerable relief from her symptoms of coughing and production of muco-

purulent sputum after bronchoscopic examination and lipiodal. The later bleeding and coughing is also fairly characteristic of bronchiectasis. Therefore, in spite of the x-ray findings one would have to assume that chronic bronchiectasis is present though one would feel hesitant about considering an abscess in the absence of x-ray findings.

Another very definite finding was a large mass in the right upper part of the abdomen which shoved the stomach over to the left, and the large intestines and perhaps the kidney downward. This was associated with a 40% retention of bromsulfalein at the end of forty-five minutes. This certainly indicated that something was wrong intrinsically with the liver. The findings of red cells with the 2 plus albumin and a few white cells and granular casts in the urine is suggestive of some renal irritation, perhaps a low grade chronic glomerular nephritis. The chlorides are slightly on the low side though not markedly so. This possibly is the result of protracted vomiting. There are also very vague symptoms of a neurological character, as the lack of precise differentiation between sharp and dull sensation in the lower portions of the leg, questionable loss of position sense and vibration sense and questionable Romberg. These findings do not mean a great deal to me as I know very little about neurology, but it does suggest that the patient was either somewhat apathetic and could not make these fine differentiations or that there is a possibility of polyneuritis. I am unable to discuss this phase of the case.

The important findings are, therefore, a well defined vitamin deficiency, definite liver damage, definite clinical evidence of bronchiectasis, possible neurological findings suggestive of polyneuritis, evidence of a well defined infection as shown by elevated temperature, pulse and leucocytosis and the absence of either clinical or serological evidence of syphilis. In regard to the blood count and serological test, I would be compelled to state that a diagnosis of syphilis and of pernicious anemia, could not possibly be made, in an absence of these studies. Though syphilis is a pleomorphic disease and is stated to mimic almost any condition, I can find no evidence that it was present in this case. Likewise, pernicious anemia shows a decreased white count in most instances, unless accompanied by infection, and surely if suspected a gastric analysis would have been done. Therefore, I am going to dismiss

these two diseases from discussion and attempt to name a few conditions which may have been the cause of this patient's illness, though I realize that diagnosis by exclusion is not the most desirable means of making a differential diagnosis.

The first condition to be discussed, which the patient obviously had, is bronchiectasis. There is something to be said for this condition and that is that a bronchiectatic abscess frequently metastasized to the liver. However, in liver abscesses, the temperature is much higher than in this case and there are usually associated chills and in most instances, jaundice. Against this condition is that there are certainly no x-ray findings of an abscess in the lung and consequently with this lack of pulmonary abscess, one could not consider seriously a metastatic abscess from the lung.

Bronchiectasis is frequently associated with generalized amyloidosis and amyloidosis of the liver. I believe in this case, amyloidosis can be ruled out because of tenderness of the liver, the presence of definite infection and the presence of an acute abdominal condition. There could however, be two conditions present, one acute abdominal and the other a chronic amyloidosis of the liver. However, I do not believe this to be the case. A bronchiogenic carcinoma with metastasis to the liver arising from an adenomatous obstruction to the bronchus is a possibility. The age of the patient is somewhat against this. More convincing evidence, however, is the fact that neither the bronchoscopic examination with lipiodal injection nor the present x-ray findings suggest a mass in the lung.

Myocarditis, with myocardial failure and associated congestion of the liver and lungs is a possibility. We have against this the normal findings of the x-ray, normal blood pressure, no evidence of fluid in the abdomen or in the chest. While myocardial insufficiency might be on the basis of a berberi heart, the x-ray films certainly would have shown some dilatation of the heart or an increase in myocardial shadow. The liver would not become this large early in a case of congestive heart failure. It is also unlikely that there is an obstruction of the hepatic vein causing the so-called Chiari's syndrome. This would be associated with ascites and there is no evidence that this patient had fluid in the abdomen.

Now to consider the renal findings. The possibility of a glomerular nephritis is certainly

present. However, it is not sufficient to have caused hypertension or evidence of renal failure as the NPN was normal. It is possible that there was a tumor of the kidney, probably hypernephroid in type with diffuse liver metastasis. However, apparently the lungs would have been involved. Also pyelograms show no evidence of any pathological changes other than a low right kidney which might be due to the enlarged mass in the abdomen. While metastatic tumors to the liver will give all the evidence of an infection such as fever, chills and leucocytosis, I do not believe we have sufficient clinical or laboratory findings to indicate any well defined pathology in the kidney itself. There is one other condition which we are compelled to recognize in this club as it is mentioned in practically every discussion, and that is periarteritis nodosa. In this case, with the exception of the bronchiectasis, one can seriously consider a so-called necrotizing arteritis or panarteritis, associated with pleomorphic symptoms polyneuritis and abdominal changes. Neurological findings have been reported as the initial presenting symptoms in many cases of periarteritis nodosa. There are also abdominal episodes which might be considered as a part of the disease. Likewise the kidney lesions could also be considered as a part of the syndrome of periarteritis nodosa. This, however, does not explain the liver insufficiency as well as the liver enlargement. I do not believe that a diagnosis of periarteritis nodosa can be made with any degree of accuracy though the entire lesion may be caused by this condition. Another condition which might be considered is polycystic kidneys associated with an enlarged polycystic liver and even a polycystic pancreas and cysts of lungs. The pyelograms would have been somewhat revealing in polycystic kidneys and most certainly cystic lungs would have been detected by the radiologist. This diagnosis in many instances can not be made without operation as the kidneys may be relatively small. However, there is no definite indication that this patient had polycystic changes in her viscera.

We must of course, come to the primary site of the lesion and that is in the upper right quadrant of the abdomen. We can probably rule out conditions of the gastrointestinal tract such as ulcers of the stomach and duodenum on the basis of negative x-ray findings, though some ulcers might not be shown by x-ray. However, an ulcer would probably have been associated with vomit-

ing of chocolate-colored blood, which this patient did not show. It is not easy to rule out an infection of the gallbladder. However, the Graham test was completely negative, meaning that there was filling of the gallbladder with proper expulsion of the dye and neither positive or negative shadows found in the gallbladder. Primary carcinoma of the liver might be seriously considered as it can occur in this age group though this condition is not likely. The age might be against it but there is also a lack of jaundice or other evidence that the patient may have had a diffuse carcinomatosis of the liver.

The general clinical setup in this case would seem to be that of a vitamin deficiency with fatty degeneration of the liver and subsequent cirrhosis which does occur in such conditions as vitamin deficiency and perhaps alcoholism. Enlargement of the liver is not unusual, particularly in the early stages of a cirrhosis or a fatty degeneration of the liver. Likewise, ascites may be absent early and jaundice may be considerably delayed. With the primary symptom and signs of the condition along with a well-defined evidence of hepatic insufficiency, the obvious presence of vitamin deficiency, one would almost be compelled to come to this conclusion. The patient may have been taking alcohol or other substances which gave high nutritional value, but no vitamins or essential proteins to prevent the development of liver damage.

In recent literature there has been described associated with cirrhosis of the liver, a chronic pancreatitis with pancreatic pain. There is considerable to be said against this. There was no amylase determination which probably would have been normal, and we are not definitely assured that this enlarged mass is the liver. The pain is not characteristic of a pancreatitis. There was no definite evidence of shock present and no indication that the patient had rigidity of the abdomen. It would seem, though, that pancreatitis might have been the etiology of the acute abdominal episode.

In summary we have a female, 29 years of age who is apparently well nourished but has taken very little food and vomited quite frequently in the last few months. There is a definite avitaminosis, possible lack of essential proteins, suggestive polyneuritis enlarged liver with decreased function and acute abdominal pain. With these findings in all probability the patient

had a cirrhosis of the liver with a complicating pancreatitis.

DIAGNOSIS

1. Cirrhosis of the liver, probably on a vitamin deficiency basis, associated with a chronic pancreatitis. In addition the patient had avitaminosis, probably chronic bronchiectasis, and perhaps polyneuritis.

DIFFERENTIAL DIAGNOSIS

Dr. J. H. Means: "About six months prior to entry a bronchoscopy and lipiodol study were performed, following which she felt better for a few weeks." Are you holding back what was found?

Dr. Benjamin Castleman: That is all that is in the record.

Dr. Chester M. Jones: It was done elsewhere.

Dr. Means: Apparently no Hinton test was done but I do not believe the patient had syphilis. Dr. Holmes has just arrived and I need him. Since time is short, I shall put it up to him this way. If you glance at the first paragraph in the abstract you will see that for twelve years this woman was apparently coughing up purulent sputum, which for a year had often been bloody. She raised as much as a eupful; it smelled bad but later it states that x-ray examination was negative.

Dr. George W. Holmes: That is correct.

Dr. Means: I have a case of tuberculosis in mind in which the x-ray films were reported to be negative for tuberculosis.

Dr. Holmes: That is unusual. About the only time when x-ray films are negative in pulmonary tuberculosis is when the lesion is in the bronchus. You can have an ulcerating lesion in the bronchus with tubercle bacilli in the sputum and a negative x-ray film. You cannot have parenchymal tuberculosis and a negative x-ray film.

Dr. Means: One of the wisest men on diseases of the chest, under whom I was fortunate enough to be a student, was the late Dr. Frederick T. Lord. He said that any patient who had a story of this sort must have a chronic bronchopulmonary suppurative process of some kind. If not in the lung, at least in the bronchus.

Dr. Holmes: Do not let me mislead you. The fact that the x-ray films are negative does not prove that the patient did not have a lesion in the bronchus.

Dr. Means: I know that very well. The an-

swer is that the radiologist cannot necessarily determine a lesion of the bronchus.

According to Dr. Lord's philosophy, if I remember it correctly, this woman ought to have a chronic lung abscess or bronchiectasis. It is too long a history for abscess, however. A lung abscess would have cleared up or would have killed her by that time; therefore it must be bronchiectasis. Dr. Holmes could not demonstrate bronchiectasis, I suppose, if the cavities were empty. Is that correct?

Dr. Holmes: We miss a certain number of cases but this woman's chest is entirely normal. I hardly think that she could have had bronchiectasis.

Dr. Means: How could she have raised a cupful of foul-smelling sputum daily for twelve years and not have had anything in the chest? Had she a fistulous tract that fed pus into the bronchus from somewhere else?

Dr. Holmes: We do not know whether the observation was accurate. The material may have come from the stomach.

Dr. Means: The gastrointestinal tract was reported negative by x-ray study.

Dr. Holmes: The x-ray films do show a large liver.

Dr. Means: I am going to get to that. Let us stick to the thorax for the moment. I was thinking about the esophagus and the bronchus. Are they mixed up with one another or connected in some unholy alliance?

Dr. Holmes: If they are, we have no evidence of it.

Dr. Means: She was said to have vomited blood and, unless it is a perfectly erroneous history, I am forced to conclude, x-ray or no x-ray, that she either had or had had some sort of chronic bronchopulmonary suppurative process. I do not believe that these facts fit with any other interpretation, and a little thing like a negative x-ray should not shake one in one's argument if one thinks that the premises are sound. We are told that she was vomiting. If this was all gastrointestinal in origin it seems to me that Dr. Holmes ought to see something in the gastrointestinal tract beyond a little pushing of the liver in a southeasterly direction. What can you tell about the gastrointestinal tract, Dr. Holmes? Is there anything else besides the pushing down of the liver?

Dr. Holmes: I did this examination myself and that is all I could or can see.

Dr. Means: But you are willing to say that the liver is big.

Dr. Holmes: Yes.

Dr. Means: There have been cases in which the radiologist has said that the liver was big and the clinician has said that it was not big, and Dr. Castleman has found that sometimes the radiologist was right and sometimes the clinician was right. But here both the clinician and the radiologist thought that the liver was big; ergo, I shall say that the liver was big. Of course if the patient had a chronic bronchopulmonary suppurative process with a big liver she is entitled to have had amyloid disease, but I do not think that amyloidosis would explain the acute picture of severe pain in the right upper quadrant.

I have said all I need to say about the lung situation. I do not believe that it was tuberculosis.

In these exercises we usually try to explain the whole picture on the basis of a single underlying disease. We are taught that that is the right thing to do in differential diagnosis. If you stick too rigidly to it, however, you come a "cropper" a certain number of times, because a person can have two diseases. Whether the five-day story of abdominal pain has anything to do with the thoracic story, I do not know. I suppose we should try to relate it, but it does not have to be related. One thing is evident. I am sure that she had an avitaminosis, which explains the stomatitis, the raw red tongue, the sensory changes, the reflex changes and so forth. The clinicians gave her high-powered vitamin therapy, so evidently they thought the same.

On physical examination we are told that this woman was well nourished, although she had lost weight. She might have been overweight to start with. I do not know why she did not look sick. She was said to be exhausted and was forced to stay in bed. Sometimes neurotics take to bed, but she was not neurotic I should say. I do not know whether she had syphilis. There is no reason to suppose that she did. I do not believe that she had tuberculosis of the liver, but she did have a big liver. I once met my Waterloo at a clinicopathological conference in St. Louis because I had a case of big liver and jaundice and asked Dr. Chester M. Jones before I got on the train if I should consider hepatic tuberculosis. He said, "No; it is so rare that

you can forget it." But it was tuberculosis of the liver.

A word or two about the attack. I tried to think of the various possible causes. One should always think of lymphoma, but I do not believe that lymphoma could have explained the picture.

I should like to have more than one body temperature. Was it a septic chart?

Dr. Castleman: No; it was flat, the temperature reaching 99.2°F. on only one occasion.

Dr. Means: This is really difficult—an infectious process without any fever to speak of. I still do not believe that it was cancer. Cancer of what? Of the liver, I suppose. She could not have had cancer of the lung for twelve years, that is sure. Dr. Holmes could find nothing in the lung. If the acute attack was related to the process in the lung, it must have been a process in the lung that was infectious, such as a bronchiectasis. I looked up in some text books to see if there was any kind of suppurative process in the lung that gives rise to suppuration in the liver. I tried to find whether a suppurative bronchopulmonary disease may extend through the diaphragm and cause diaphragmatic abscess, thus dislocating the liver. We are told that it was a big displaced liver. I could not, however, find a word about that in my brief literary studies, so perhaps we cannot connect the two processes.

How about a blood-borne infection from the lung? Could a blood-borne infection get from the lung to the liver? It could through the hepatic artery, I suppose, but it seems extremely unlikely.

Let us see what we can get from the laboratory work. There were no lymphocytes in the first smear. I asked Dr. Wyman Richardson what that meant and he said that it made no sense to him; he added that it probably was a poor smear and that the examiner had counted only 100 cells. He is probably right, so that I am not going any farther with that. He also said that scarcity of lymphocytes was in favor of infection, but 3 per cent of eosinophils was against it. So there we are. They found some lymphocytes the next time, though. The white-cell count was 25,000. This favors an infectious process. The non-protein nitrogen, sugar and protein levels and the van den Bergh reaction were normal. The Chloride was slightly down. The prothrombin time was only slightly elevated, but there was a positive bromsulfalein test.

Would you call it an impressive dye retention, Dr. Jones?

Dr. Jones: Forty per cent—yes.

Dr. Means: So I am forced to believe that the liver was sick at least. She had a big sick liver. What kind? Infectious, I think. How much hepatitis can one have without jaundice?

Dr. Jones: A great deal.

Dr. Means: She could have had acute cholecystitis, I suppose. That would fit this five-day story of severe pain at the right costal margin, radiating to the epigastrium but not to the back. It does not have to go into the back. One can have gall-bladder pain intermittently for twelve hours. That part of the story is all right, but with a big sick liver we must infer more than gall-bladder disease. Also the Graham test was negative.

I thought of multiple liver abscesses in some way due to the old infection. I could not find any literary support for that hypothesis or for subdiaphragmatic abscess; but certainly there must have been something acute going on in the region of the liver, because of the acute onset of pain, the mounting white-cell count and the tenderness and spasm over the liver. I am much impressed by the last point.

That is the best that I can do. I mentioned a number of possibilities, some of which I am sure were not present. I believe that she had a chronic bronchiectasis. I believe that all the vomiting in the absence of any positive findings in the gastrointestinal tract ought to be interpreted as the result of terrific coughing. At any rate there is no positive evidence of gastrointestinal disease that permits a diagnosis, so that I shall stick to the facts and say that she had a chronic bronchopulmonary process, probably bronchiectasis of long standing. Did she have clubbed fingers?

Dr. Castleman: No.

Dr. Means: I do not believe that she had cancer, tuberculosis, actinomycosis or lymphoma. I mentioned the possibility of an amyloid liver, but that does not explain the full picture. I am therefore forced to say that she had some kind of infectious process of the liver. Where it came from I do not know. It may have been multiple abscesses. I do not believe that it could have been an amebic abscess.

Dr. Holmes: Were the sinuses examined? It is possible that the pus was coming from the sinuses instead of the lung.

Dr. Means: A patient does not cough up a cupful of foul sputum daily and have symptoms for twelve years from a sinus.

Dr. Helen Pittman: Sinuses feed the bronchi.

Dr. Means: Yes, but there has to be something in the bronchus.

Dr. Pittman: I think that another point that Dr. Holmes brought out, namely, whether anyone saw the sputum, is a good one.

Dr. Means: Well, of course, the whole history may be false, but I have to accept the facts given.

Dr. Castleman: Dr. Meigs, will you tell us about your impression?

Dr. J. V. Meigs: This woman's acute illness necessitated a night visit. It was thought to be an acute surgical emergency. When I saw her she did not look so well as this record implies. She appeared extremely sick and was nauseated and vomiting; the white-cell count was 25,000 with 93 per cent neutrophils. She had definite spasm and tenderness in the right abdomen. I could not make a diagnosis, nor did I believe that she was sick enough to warrant immediate surgical operation.

Dr. Means: Did you think that she had intestinal obstruction?

Dr. Meigs: No; I thought that she might have had a chronic rupture of some viscus. There was a mass on the right side. I could not feel the edge of the liver. All I knew was that we ought to get her some place where we could follow her closely. She was brought here. The next morning she looked better and the white-cell count had dropped. I thought that she had some disease connected with the liver. I asked Dr. Jones to see her. We thought that it was some sort of medical problem quite definitely connected with the liver. I did not believe that the pulmonary difficulties had anything to do with it. Dr. Richard H. Overholz had bronchoscopied her and found bronchiectasis. Dr. Jones carried on.

Dr. Jones: By the time I saw the patient there was little in the chest except for a few rales, particularly at the right base. We all thought that she had a low-grade bronchiectasis to account for part of the clinical picture, but we did not believe that it had caused the symptoms that brought her to the hospital. She had a large mass, which Dr. Meigs and I both thought was probably a large liver. It was extremely tender for two weeks after admission to the hospital.

We could not be certain whether the tenderness was along the hepatic border or underneath the edge of the liver. As she improved, with adequate hydration and rather intensive vitamin therapy for obvious avitaminosis, it became clear that the tender mass actually was liver. The one test that gave us a direct clue was the bromsulfalein test, with 40 per cent dye retention in the absence of jaundice. Dr. Meigs and I decided that the sensible thing to do was to sit tight until she got better and then make absolutely certain that there was no disease besides the intra-hepatic disease. For that reason she was explored.

The patient was explored with the idea that she had a subacute inflammatory, possibly cirrhotic, process in the liver, not necessarily the liver. We simply wanted to make certain.

Dr. Means: The chief point of disagreement between Dr. Jones, who saw the patient and therefore had more information, and me is whether the process in the liver was acute or subacute. There is nothing in the abstract on which I could say that it was other than acute. I did have cirrhosis down here on my list of differential diagnoses but forgot to mention it. You have to think of it because it is a frequent liver disease producing a great variety of pictures and does produce pain and fever. There have been a number of such cases; I recall one in particular, that of a nurse who had acute pain and was rushed to the amphitheater and was operated on, only to find that she had a cirrhosis. Of course I shall have to agree that cirrhosis is a possibility.

CLINICAL DIAGNOSIS

Subacute hepatitis (? cirrhosis).

DR. MEANS' DIAGNOSES

Acute infectious hepatitis (? multiple abscesses, ? cirrhosis).

Chronic bronchiectasis.

Avitaminosis (B complex).

ANATOMICAL DIAGNOSIS

Acute alcoholic hepatitis.

PATHOLOGICAL DISCUSSION

Dr. Castleman: At operation a large fatty liver was found, and biopsy showed the findings that have been described in acute alcoholic hepatitis. It was not actually a cirrhosis, because at this stage there is no actual fibrosis. The liver cells were filled with fat, and many showed the hyaline network described years ago by Dr.

Frank B. Mallory.* This case showed it to an extreme degree and around these areas there was a marked polymorphonuclear infiltration, which may have accounted for the elevated white-cell count. In the later stages of this condition there is a replacement of liver cells by connective tissue and a gradual decrease in the size of the liver to one perhaps a little larger than normal, but rarely smaller than normal.

Dr. Jones: There was a real discrepancy in the history as regards the use of alcohol; I think that it is fair to say that the use of alcohol was not known to be excessive, but it may have been an important factor. Six months before entry—and this is not mentioned in the history—the patient had an episode that was clearly one of acute pellagra and that might have contributed

to the development of liver disease when combined with alcohol and other unknown factors. The leukocytosis is not inconsistent with acute liver damage, even on a non-infectious basis—a point not generally recognized. I have seen a white-cell count as high as 35,000 with many immature cells, such as young myelocytes, in patients with rapidly progressing hepatic damage.

It is interesting to add that this patient has been extremely well since leaving the hospital and the liver has receded almost to the costal margin.

Dr. Means: There was no definite history of alcoholism?

Dr. Meigs: No more than cocktail parties all last summer.

*Mallory, F. B. *The Principles of Pathologic Histology*. Philadelphia: W. B. Saunders Company, 1914. Pp. 504-508.

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TOPICS OF CURRENT MEDICAL INTEREST

RX, DX, AND DRS.

By Guillermo Osler, M. D.

The clinical use of AUREOMYCIN is well and currently summarized by Herrell in December 7th proceedings of the staff meetings of the Mayo Clinic. . . . Among the data on absorption, excretion, effects, etc., was one point which seems especially notable—aureomycin readily traverses the blood-brain barrier and diffuses into the cerebrospinal fluid. . . . A useful fact, but also lucky; the drug is too acid to be given intra-theically.

COMMUNICATION—A query by Dr. Leopold Brahdy of New York, printed in the November column, has evoked a very good reply from an Arizona M. D. . . . Dr. Brahdy had wanted to know (in a letter to "Modern Medicine") why HOSPITALS do not improve TUBERCULOSIS SURVEY METHODS among their EMPLOYEES. He meant all hospitals in all cities, but referred particularly to certain cities (including Tucson) which are known to have a good municipal record straight for his city, as follows—1. St. Mary's Hospital, The Tucson Medical Center, and the Southern Pacific Hospital examine all personnel members by x-ray. St. Mary's has done so for many years, and they re-examine all nurses known to be in contact with cases of tuberculosis at intervals of three months. 2. St. Mary's has had a photoreontgen unit for taking small films of all ambulatory new admissions in use for two years. Tucson Medical Center has a unit on order for the same purpose. The S. P. Hospital is protected by a pre-employment x-ray examination of all employees. . . . This definitely gives Tucson a blue ribbon, and Dr. Brahdy shall hear of it (but there are still quite a few hospitals with less perfect methods).

We are fortunate in having VITAMIN B12 to use in the cases of macrocytic anemia for which it is indicated—but we are also lucky in not having to wait for an explanation of its action before using it. . . . The ingenious work of Castle and colleagues helped to build a theory for the effect of Dr. Minot's use of liver; the place of liver and gastric extracts seemed to fit into the scheme; folic acid disturbed the accepted views; and B12 has forced the entire problem to be re-evaluated. The intrinsic-extrinsic factor relationship is being studied again, and the midnight oil is being burned in Boston and parts west.

It has been suggested that a note be written concerning the difference between REGIME and REGIMENT. . . . A physician would seldom have

need to use the term "regime," since by usage it is restricted to a royal rule, or a social or governing system. "Regimen" may have a similar implication, but regimen is the preferred word to be applied to a medical program or system. . . . The words also have a separate derivation.

A state newspaper editor, who wants to control tuberculosis in Arizona without paying for it, has told of the use in Japan (compulsory—tch, tch!) of BCG. More than 30,000,000 Nipponee have been vaccinated with the "serum" (sic), and all individuals between birth and 30 years of age required to accept it once a year. . . . It certainly is true that many Arizonans could use the vaccine with profit (provided that the necessary conditions were fulfilled), but it would have no effect on the thousands of residents who now HAVE the disease, are infectious, and who need to be treated as cases and sources.

Although penicillin protects patients with recent rheumatic fever and those who tend to have recurrent purulent bronchial infections, it has not been found to reduce the time-loss from RESPIRATORY or NON-RESPIRATORY ILLNESSES in an industrial group, as reported by Kuh and Cullen.

The TONGUE AND MOUTH form a handy bulletin-board which many, but not all doctors inspect. . . . It may show the signs of systemic infections, intrinsic lesions, deficiencies, allergy, local irritations, C-V disease, relative hydration, psycho neuroses, etc. . . . Medical texts give some help in diagnosis, and a few books on oral medicine are available. . . . The questions which plague physicians most, if one is to judge by the "Queries and Minor Notes" section of the J.A.M.A., are those which have to do with bizarre and chronic subjective sensory changes, and the endlessly recurrent herpetic stomatitis. They are both difficult problems, but can be solved by a careful medical detective.

ANTIHISTAMINE NOTE No. 1—Three Northwestern University allergists have devised a method to indicate the probable effect of AH drugs. . . . Scratches are made on the back; the antihistaminic is applied to the scratch, and then mopped off; histamine is then applied. . . . The degree by which the AH drug prevents skin irritation is the amount of protection to be expected. . . . The test needs more testing.

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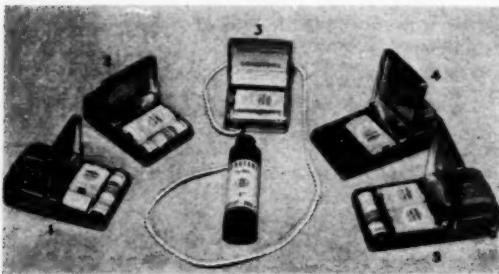
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(ANTI) AH NOTE No. 2.—Itching and burning of the skin, due to a variety of causes, has a new therapy, other than the antihistamine drugs. . . Langley and Morgan of the Guthrie Clinic in Sayre, Pa., report remarkable success from "chlorresin," a water soluble chlorophyll in a hydrophilic ointment. . . Lesions healed in 80 per cent of the cases in which symptoms were controlled by the ointment.

The discovery, about 25 years ago, of the clinical effects of PHEOCHROME, (chromaffin) TUMORS (called pheochromocytomas, chromaffinomas, or paragangliomas) has led to their more occasional recognition. It is the sort of diagnosis which makes one envious, and hopeful. . . . Though the adrenal is the most common site, they may occur elsewhere. Though the carotid body is pheochrome tissue, some of its tumors do not cause the symptoms. Though usually unilateral, the tumors may be bilateral or multiple. Though the hypertensive episodes (and their sequelae) usually are paroxysmal, some cases have a sustained hypertension due to the continuous, excessive release of epinephrine. Though usually benign, they may be malignant. . . . Several clever diagnostic points have now been described—the typical acute and transient attack is most suggestive. An IV injection of adrenalin will cause the syndrome, and a rise in BP. An IV injection of an epinephrine antagonist (benzodioxan) causes a decreased BP—a change which does not occur in essential hypertension. The effect of the "blocking" drug tetra-ethyl ammonium chloride is not certain. An IV injection of histamine produces a hypertensive crisis. Recently mecholyl (methacholin) is said to be superior to histamine, and produces a drop followed by a rise of the BP. The simple cold pressor test produces a rise in BP. Pressor substances may be found in the blood of patients with tumors. It is said that the eye-ground changes are characteristic. . . . This diagnostic armament seems remarkable.

By x-raying the chests of from 300 to 4,000 people at each of 32 STATE AND COUNTY FAIRS in Michigan last year, the mobile units of the Department of Health picked up 485 cases of reinfection tuberculosis. In the total of 51,724 people examined, there were 1,318 chest abnormalities.

Certain NOSE AND THROAT SPECIALISTS bear a heavy burden in their Tantalus-like efforts to protect the public. No sooner does silver nitrate and its argyria hazard pass by, than oily nose-drops are found to produce lipid pneumonia. As oil becomes outmoded as a vehicle, the use of aqueous and saline medications are shown to be over-used and harmful. Then along comes the aromatic "inhalers" with their habit formation. . . . Dr. Noah Fabricant has summarized the ill-effects of decongestants, which may

result in an eventual congestion, with destruction of mucosal form and function. . . . He believes that the current needs are for an abuse-proof liquid sympathomimetic amine, and a method of giving small measured amounts to prevent over-dosage. . . . The latter hope has possibly been realized in the form of an ejectant device now on the market.

Most everyone can look back to a brief brush with PATHOLOGY, or at least a memory of hundreds of containers and dyes which were used for THE PROCESSING OF TISSUES. . . . It is pleasing and surprising to see progress in this laborious field; the laboratory journals now carry advertising for an "autotechnicon" which can be set to fix, dehydrate, wash, stain, and deliver finished tissues—all without the need of human hands or attention.

POLITICS No. 1.—The State and Territorial Health Officers who recently expressed disapproval of the proposed compulsory health insurance laws really showed courage. Their big boss, whose guests they were in Washington, was Oscar Ewing of the FSA. They pointed out the high standards of health and the progress of sanitation and preventive medicine in the U. S. This is more than honesty and sincerity.

POLITICS No. 2.—Figuring-all-the-angles Dept.—"National health insurance would automatically give to every man, woman, and child the status of a 'good paying' patient. In all this I do not see how the retail druggist can fail to profit enormously." An address before the National Association of Retail Druggists, by Oscar Ewing.

POLITICS No. 3.—Dr. Lull of the A.M.A. has recently replied, in an interview, that the A.M.A. is NOT antagonistic in the correction of national health deficiencies. . . . Actually the Society is only against compulsory health insurance. It is FOR the hospital construction act, the federal grants to local health units, federal aid to medical education, the National Research Foundation, the World Health Organization, and voluntary insurance plans.

Almost everyone can remember seeing cases of DIABETIC COMA which responded to therapy, with a cleared ketosis and a lessened hyperglycemia, but which again became weak and stuporous, and sometimes died. The cause was usually laid to a vagary of insulin, or a strange pancreas. . . . It is now certain that at least some of those cases suffered from a HYPOPOTASSEMIA (hypokalemia). Several factors may cause potassium to be released and excreted during diabetic therapy, and the effect is a depression of voluntary and cardiac function, and an upset of the water balance. . . . Therapy should include use of insulin against the ketosis (possible with-

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out addition of CH during the early stages) and the exhibition of potassium (KCL in broth) or potassium-containing foods (orange juice or oatmeal gruel).

ADRENAL CORTEX NOTES.—Cortisone is becoming available in larger amounts, at just about the time which was predicted six months ago. . . The material is synthesized, though not simply, and now costs about \$15 per day. It is still in limited supply, and the further study of its effects must be made on those who can afford it, or on the endowed. . . Rosenberg of Michael Reese Hospital, Chicago, reports the effectiveness of Compound F, another hormone of the adrenal cortex. The disadvantage is that it can currently be made only from Compound E. It was also first isolated by Kendall. . . Incidentally, the Arthritis and Rheumatism Foundation deflated a senseless report that the various hormones were producing serious endocrine imbalances. As stated in this column many months ago, any side effects (chiefly from excessive dosage) are moderate and transient, receding shortly after the use has ceased.

A solution of the problem presented by the scarce and big-molecule ACTH may be in sight. Dr. C. H. Li of Berkeley has broken ACTH into several peptides which are only a twentieth of the molecular weight of their parent. . . . Dr. L. W. Kinsell, also of the U. of Calif., has shown that one of them is a potent stimulator of the adrenal cortex, and has the same effect on arthritis as does ACTH and cortisone. . . . The big obstacle is synthesis, but it should be easier to make a little one than a big one.

Somewhere along the way we got lost. The directions now read as follows—Alcoholism has an allergy-like character; this status is intimately associated with a hypoadrenocorticism; correction of the deficiency is theoretically sound in approach, and is justified by clinical results, since chronic alcoholism may be controlled by use of adrenal cortical hormone. . . . The authors are Tintera and Lovell of New York. (This column does not guarantee either the theory or the results).

WHAT'S IN A TITLE?—An article in the Journal of Gerontology, October 1949, by R. J. Havighurst—"Old Age; an American Problem."

It will be interesting to observe the future of a therapy for **MALIGNANT HYPERTENSION**, proposed by Page and Taylor of Cleveland in a new publication on cardiovascular disease. . . . (Page discovered a material eight or nine years ago which counteracted the pressor substance which was elaborated by the kidneys, but the early high hopes for it have not been upheld). . . The new therapy consists of five or six intravenous injections a week of a soluble bacterial pyrogen called "Pyromen." The original kidney func-

tion must be suitable, and an improvement of the function as well as a lowering of the blood pressure occur in three to six months. The symptoms of fever may be controlled by aspirin, barbiturates, etc. . . . About half of a series of this usually fatal condition were reversed in their course. Of the fatal results, each died of stroke rather than progress of the renal disease.

ARIZONA MEDICINE has now had a "case-analysis" department for three years. The idea has served to bring topical subjects to the readers, has solved several difficult cases, and has brought to our state literature from two dozen authors from outside of Arizona. . . . If one is a lion-hunter, the bag of such "lions" would please Teddy Roosevelt, or the head of a lecture bureau. They have been obtained from east to west and north to south of the United States; they have included professors, editors, authors presidents of medical societies, and instructors on the way up; and they have been almost uniformly good. We are lucky, and people are very kind!



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IN THE SUPREME COURT OF THE STATE OF ARIZONA

R. L. ISON,
Petitioner,

- v -

WESTERN VEGETABLE DISTRIBUTORS, Defendant Employer,

THE INDUSTRIAL COMMISSION OF ARIZONA, Defendant Insurance Carrier,
Respondents.

No. 3732

Appeal by Certiorari from an Award of
The Industrial Commission of Arizona.

Award Affirmed.

Terrence A. Carson, Attorney
for Petitioner, Emil Wachtel
(of council) of Phoenix.
Don C. Babbitt, Howard A.
Twitty, of Phoenix, Attorneys
for Respondent Industrial
Commission.

LOCKWOOD, C. J.:

This is an appeal from an award of the Industrial Commission of Arizona, hereinafter called the commission, denying compensation to R. L. Ison, hereinafter called the petitioner, for injuries which the latter alleges he received as the result of an accident arising out of and in the course of his employment. The commission made the following finding, which was challenged by the appeal:

"That the evidence is insufficient to establish that said applicant sustained any injury by accident arising out of and in the course of his said employment on or about said date; and the evidence is further insufficient to establish that the disability from which said applicant alleges to be suffering is proximately the result of accident."

This finding is, in reality, a finding upon two issues of fact; the first being that the evidence is insufficient to show the accident upon which the petitioner relies happened; and, second,

that even assuming there was an accident, the evidence is insufficient to show that the disability from which the petitioner admittedly has suffered, was caused by the accident. We must, therefore, consider the testimony in the case and in so doing, are bound to apply the rule to which we have adhered consistently, that if there is reasonable evidence sustaining the award of the commission, this court will not set it aside.

We consider first the evidence in regard to the alleged accident. It is the contention of petitioner that while he was engaged in putting tops on certain lettuce crates by means of an electric lidding press, a crate on which he was working was ejected from the press in such a manner as to hit him a severe blow upon the chest, and that as a result of such accident his lung became abscessed, so that he lost four months' work. In support of the fact that the accident did occur, we have the testimony of the petitioner himself, the affidavit of one James P. Brown who apparently saw the crate hit petitioner, the testimony of the witness Akin, who did not actually see the accident but saw the crate of lettuce scattered over the floor immediately after the accident was said to have occurred and heard petitioner complain the next day of being hit; and the testimony of witnesses Roach and Sprangle, who also heard petitioner complain of the accident the day after it happened. As opposed to this, we have the statement of the employer's foreman, who said that while he heard the petitioner claim his side hurt him shortly after the accident, he did not state that the pain was caused by the accident until the time when he went to the hospital, nearly thirty days after the alleged accident. On this evidence, was the commission justified in the finding that it was not proved the accident occurred?

We have held that in view of the interest of an applicant for compensation, the commission is not required, as a matter of law, to accept his uncorroborated testimony in regard to an accident; Davis v. Industrial Commission (Ariz.) 49 Pac. (2d) 394. But we have also held in several civil cases, and we think the same rule applies to compensation cases, that triers of fact may not disregard the undisputed testimony of witnesses who have no interest in the matter, unless their testimony is unreasonable or im-

peached by some of the circumstances of the case; Otero v. Soto, 34 Ariz. 87, 267 Pac. 947; Equitable Life, etc. v. De Johnson, 36 Ariz. 428, 286 Pac. 817. Applying this last rule, we think the commission was not justified in disregarding the affidavit of Brown which is, in substance, that he saw the accident occur, especially when corroborated by the testimony of the other witnesses in regard to the complaints made by petitioner shortly after the accident. We hold, therefore, that the finding that there was insufficient evidence to show that the petitioner was injured by an accident arising out of and in the course of his employment on April 9, 1935, is not sustained by the record.

We consider next the question of whether any disability arose from the accident and injury. It is not every accident nor every injury arising from an accident which is compensable. The theory of the law is that it is only injuries which produce financial loss to the injured party that are compensable; sections 1421, 1439, R. C. 1929. The petitioner claims compensation for loss of time which he alleged was caused by the accident and injury. It is admitted that he was compelled to go to the hospital for a chest affection on April 25th, and that by reason of such affection he lost about four months' time from his work, being apparently perfectly recovered after that period. The question then is, was the condition which caused his hospitalization and subsequent loss of time caused by the accident of April 9th? Like most cases, where the injury is not an immediate and patent one, such as the loss of a member or a broken limb, the question of causal relation between the accident and the disability depends upon expert medical testimony. Two expert medical witnesses gave evidence on this point, Dr. Fred G. Holmes and Dr. Coit I. Hughes, both of them thoroughly qualified physicians. Dr. Hughes first saw petitioner on April 25th. After examination, he sent him to a hospital, and diagnosed his case as being a ruptured blood vessel in the lung which had produced a clot of blood, blocking a bronchial tube, which eventually resulted in an abscess of the tube. He judged, from the history of the case given him by the patient, that the original cause of the lung condition was the blow received from the crate of lettuce on April 9th. Dr. Holmes examined the patient some time later, but prior to June 18th. He also examined the x-rays taken of the patient while he was in the

hospital, and had other x-rays taken at the time of the physical examination made by him, and secured a full history of the case. He made a very full report, which was characterized by Dr. Hughes as being very fair, and reached the following conclusion:

"It would seem that all of the symptoms in this case would be adequately explained by a pneumonia with possible small abscess formation starting the latter part of April and concluding after eight days in the hospital. His pain on taking a deep breath is undoubtedly due to some lung adhesion on this side following this condition. Whether one may in any way ascribe this pneumonia with probable lung abscess to his accident on April 10th, is difficult to say. If the history as obtained is correct that he did not show any sickness from April 10th to April 28th, it would seem that eighteen days intervened before his pneumonia. A pneumonia following a severe contusion to the chest is possible but quite rare. However, such a pneumonia would be expected to supervene within three or four days or at most a week. It is felt that pneumonia is usually due to a plug in a bronchus and there is no reason to think that such a plug should wait for several weeks to form. It is very rare to find an abscess formation following an injury to the chest. Any injury to the chest which is not sufficiently severe to stop him from working would be most improbable as a cause of a pneumonia two weeks later. One cannot absolutely exclude an old tuberculosis in this case, but I believe that all of the symptoms and findings can be just as well accounted for as following his acute pneumonia with probable lung abscess early in May."

It will be seen by this that Dr. Holmes agreed with Dr. Hughes in diagnosing petitioner's trouble as a lung abscess, but concluded that it was very improbable that it was caused by the blow on the chest of April 9th. We have, therefore, the opinion of two reputable physicians in direct conflict as to whether it appeared affirmatively that the abscess was the result of the blow. It is, of course, the law that the petitioner must establish his case by a preponderance of the evidence upon every material point in compensation cases in the same manner as the plaintiff in civil actions; Ocean Accident & Guarantee Corp., 32 Ariz. 265, 257 Pac. 641; Johnson v. Industrial Comm., 35 Ariz. 19, 274 Pac. 161. Preponderance of the evidence means such evidence as when weighed with that opposed to it has more convincing force, and from which it results that a greater probability is in favor of the party upon

whom the burden rests. It does not necessarily depend upon the number of witnesses; it merely means that the testimony which points to one conclusion appears to the trier of facts to be more credible than the testimony which points to the opposite one. *The capacity of the submitted testimony to enforce belief on the arbiter to whom it is submitted is the touchstone of preponderance as applied to the testimony of witnesses.* With this rule for our guidance, can we say affirmatively that the preponderance of the evidence as to the causal connection between the accident and the bronchial abscess is, as a matter of law, with the petitioner? Obviously, when two equally honest and experienced expert witnesses reach opposite conclusions, the only thing the trier of fact can do is to decide which one of these witnesses is more probably correct in his conclusion. In so doing, he may take into consideration the experience of the witnesses in diagnoses of ailments of the kind under consideration, and their interest or bias, conscious or unconscious, in the result to be reached. Applying these rules, we think it is clear to any fair-minded layman that it cannot be said affirmatively that, as a matter of law, it was the duty of the commission to accept the opinion of one medical witness over that of the other. Such being the case, we are bound by the conclusion which it has reached as to which witness was more probably correct. It is urged that the testimony of one physician is positive that the injury caused the abscess, while the other merely states that it was extremely probable that it did not, and that the commission should, therefore, have accepted the positive testimony over that which was merely conjecture. There might be some merit in this contention if the point at issue was one which was subject to positive knowledge, such as the presence or absence of a certain person, a collision between two automobiles, or other similar matters, but the question is necessarily one of opinion and not of knowledge, and when this is so, the fact that one opinion is expressed more positively than the other, does not, as a matter of law, require that a trier of fact give it more weight. We are compelled to hold, therefore, that the conclusion of the commission that it does not appear affirmatively that there was any causal connection between the accident of April 9th and the disability from which petitioner admittedly suffered, must be upheld.

The next question, however, and one which is of first impression in this state, is whether or not the petitioner has been denied that due process of law guaranteed him by the 14th Amendment to the Constitution of the United States. Petitioner's position on this point apparently is that the Industrial Commission of Arizona, by reason of the fact that in addition to its duties of making awards in cases where compensation is asked, it is also charged with the care and custody of the state compensation fund, cannot be, within the meaning of the constitutional provision referred to, that fair and impartial tribunal which every man is entitled to in determining his legal rights. In support of this contention, petitioner relies primarily upon two federal cases, the first being that of *Tumey v. Ohio*, 71 L. Ed. 749, 273 U. S. 509, 51 A. L. R. 243, and the second that of *Ohio Valley Water Co. v. Avon Borough*, 64, L. Ed. 908, 253 U. S. 237. In the first case the situation was substantially as follows: Under the statutes of Ohio, the mayors of certain villages were given jurisdiction to try cases involving a violation of the prohibition act of the state. In case of a conviction, the mayor was paid the amount of his costs as taxed under the statute, but in case of an acquittal, he received no fee. The fines collected were paid, half to the general revenue fund of the state, and the other half to the general fund of the Municipality. Error lay from the mayor's court to the court of common pleas of the county, but the review in that court in respect to evidence was such that the judgment could only be set aside if the evidence was insufficient to the extent that it indicated prejudice or bias on the part of the trial court. The Supreme Court of the United States, in passing on the question, said as follows:

"From this review we conclude that a system by which an inferior judge is paid for his service only when he convicts the defendant, has not become so imbedded by custom in the general practice either at common law or in this country that it can be regarded as due process of law unless the costs usually imposed are so small that they may be properly ignored as within the maxim *de minimis non curat lex*. The mayor received for his fees and costs in the present case \$12, and from such costs under the prohibition act for seven months he made about \$100 a month, in addition to his salary. We cannot regard the prospect of receipt or loss of such an emolument in each case as a minute, remote, trifling or insignificant interest. It is certainly not fair to each

defendant brought before the mayor for the careful and judicial consideration of his guilt or innocence that the prospect of such a prospective loss by the mayor should weigh against his acquittal. But the pecuniary interest of the mayor in the result of his judgment is not the only reason for holding that due process of law is denied to the defendant here. ***The mayor is the chief executive of the village. He supervises all the other executive officers. He is charged with the business of looking after the finances of the village. It appears from the evidence in this case, and would be plain if the evidence did not show it, that the law is calculated to awaken the interest of all those in the village charged with the responsibility of raising the public money and expending it, in the pecuniarily successful conduct of such a court. The mayor represents the village and cannot escape his representative capacity."

In the Ohio Valley Water Company case, a state public service commission was given the power to fix the value of the water company's property for rate making purposes, and while an appeal was granted to the superior court, it was held by the Supreme Court of Pennsylvania that such court had no right to substitute its own independent judgment on the valuation for that of the superior court, but was confined to considering whether there was any reasonable evidence sustaining the finding of the commission. The majority opinion of the Supreme Court of the United States held:

"Looking at the entire opinion we are compelled to conclude that the Supreme Court interpreted the statute as withholding from the courts power to determine the question of confiscation according to their own independent judgment when the action of the Commission comes to be considered on appeal. The order here involved prescribed a complete schedule of maximum future rates and was legislative in character. *Prentis v. Atlantic Coast Line R. Co.*, 211 U. S. 210, 53 L. Ed. 150, 29 Sup. Ct. Rep. 67; *Lake Erie & W. R. Co. v. State Public Utility Commission*, 249 U. S. 422, 424, 63 L. Ed. 664, 687, P. U. R. 1919D, 459, 39 Sup. Ct. Rep. 345. In all such cases, if the owner claims confiscation of his property will result, the state must provide a fair opportunity for submitting that issue to a judicial tribunal for determination upon its own independent judgment as to both law and facts; otherwise the order is void because in conflict with the due process clause, 14th Amendment."

It thus appears that the situation upon which

the two opinions cited by petitioner were rendered differed greatly from that found in the present case, both as to the facts and the legal issues arising from such facts. In both of the cited cases, the appellant was in the position of a defendant against an action by the opposite party; in the first case defending against a criminal prosecution, and in the second case defending against a valuation of its property which would necessarily greatly lessen its income. In the present case, the petitioner was not brought before the commission against his will, nor by any act on its part. He invoked its jurisdiction voluntarily, for the purpose of securing from it an affirmation of an alleged right, created by the same act which made the commission the judge as to whether such right existed in a particular case. It is the general rule of law that when a party invokes the benefit of a statute, he may not, in one and the same breath, claim a right granted by it and reject the terms upon which the right is granted; *Tovrea Packing Co. v. Livestock Sanitary Board*, (Ariz.) 34 Pac. (2d) 420. Our compensation act is elective so far as the workman is concerned, he may either claim compensation under the terms of the statute, or may reject it and rely upon his common law action of negligence or, if he prefers, he may proceed under the employer's liability law described in section 7, Art. XVIII of the Constitution of Arizona. It is true that the employer has no right of election and to such an extent the law is not a voluntary one, but it is very generally held that an employer may not claim an act to be unconstitutional upon grounds which affect only an employee, and we think in reason and common sense the converse applies, so that the employee cannot claim that an act is unconstitutional as to him merely because it might be as to the employer. The Supreme Court of the United States, in the case of *Booth Fisheries Co. v. Industrial Commission*, 271 U. S. 208, 70 L. Ed. 908, in discussing the very point under consideration at the present time, says as follows:

"It is argued that the employer in a suit for compensation under the act is entitled under the 14th Amendment to his day in court, and that he does not accrue it unless he may submit to a court the question of the preponderance of the evidence on the issue raised. A complete answer to this claim is found in the elective or voluntary character of the Wisconsin Compensation Act. If the employer elects not to accept the provisions of the com-

pensation act, he is not bound to respond in a proceeding before the Industrial Commission under the act, but may await a suit for damages for injuries or wrongful death by the person claiming recovery therefor, and make his defense at law before a court in which the issues of fact and law are to be tried by jury. In view of such an opportunity for choice, the employer who elects to accept the law may not complain that in the plan for assessing the employer's compensation for injury sustained, there is no particular form of judicial review. This is clearly settled by the decision of this court in *Hawkins v. Bleakly*, 243 U. S. 210, 216, 61 L. Ed. 678, 684, 37 Sup. Ct. Rep. 355, Ann. Cas. 1917D, 637, 13 N. C. C. A. 959. More than this, the employer in this case having elected to accept the provisions of the law, and such benefits and immunities as it gives, may not escape its burdens by asserting that it is unconstitutional. The election is a waiver and stops such complaint. *Daniels v. Tearney*, 102, U. S. 415, 26 L. Ed. 187; *Grand Rapids & I. R. Co. v. Osborn*, 193 U. S. 17, 48 L. Ed. 598, 24 Sup. Ct. Rep. 310. The counsel for the plaintiff in error relies chiefly on the case of *Ohio Valley Water Co. v. Ben Avon Borough*, 283 U. S., 287, Cal. Ed. 903, F. U. R. 1920E, 814, 40 Sup. Ct. Rep. 527. That case does not apply. An order of a public service commission in fixing maximum rates for a water company was there attacked on the ground that the rates fixed were confiscatory. It was held that the law creating the commission which had operated to withhold an opportunity for appeal to the courts to determine the question, as a matter of fact and law, whether the rates were confiscatory could not be sustained, and was in conflict with the due process clause of the 14th Amendment. But in that case, the water company was denied opportunity to resort to a court to test the question of the confiscatory character of its rates and of its right to earn an adequate income. Here the employer was given an election to defend against a full court proceeding but accepted the alternative of the Compensation Act."

We are of the opinion that, applying the reasoning of the *Booth* case to the present case, petitioner is not in a position to question whether that provision of the compensation law, giving to the Industrial Commission the jurisdiction to sit in a quasi-judicial capacity for the purpose of determining whether a given case falls within the terms of the law, is in contravention of the 14th Amendment to the Constitution of the United States.

But assuming, for the purpose of argument only, that the petitioner may question the constitutionality of that feature of the law to which



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we have just referred, on the ground that the Industrial Commission as created by the statute is not, within the meaning of the 14th Amendment, a fair and impartial tribunal, let us examine the situation to see whether his claim is justified. It is, of course, generally true that officers acting in a judicial or quasi-judicial capacity are disqualified by their interest in a controversy to be decided from sitting therein, *Tumey Ohio, supra*. But it is frequently a close question as to what the degree or nature of the interest which would disqualify a judge must be. It is not always that the question of judicial qualification involves the constitutional validity of a law. For example, matters of relationship with the parties, or general state policy are generally held to be questions of legislative discretion, not rendering a judge constitutionally incompetent to try a case. So personal, substantial, pecuniary interest in reaching a conclusion against a litigant that it is held the due process provision of the constitution is violated by permitting him to act, and even in such circumstances, if there is no other judge with jurisdiction to determine the question at issue, it is sometimes held that interest of the nature just referred to does not constitutionally disqualify a judge, *Tumey v. Ohio, supra*. In the present case, if the Industrial Commission may not hear and determine compensation cases, there is no tribunal authorized under the law of Arizona to do so, and the whole act is inoperative, and those claimants justly entitled to compensation will be unable to obtain it. We think this alone would be sufficient to cause us to determine that the act is not unconstitutional on the ground set up by petitioner.

But going a step further, what is the nature of that interest of the commission which it is claimed constitutionally disqualifies it from hearing compensation cases? The three members of the Industrial Commission are appointed by the Governor, by and with the consent of the Senate, and are removable by him for cause. We must presume he will choose honest, intelligent and competent commissioners or that, if inadvertently he has been in error in his judgment that his appointees possess such qualifications, he will exercise his power of removal, for the law assumes public officers will do their duty. Such being the presumption, have such commissioners "a direct, personal, substantial, pecuniary interest" in reaching a conclusion

that claimants are not entitled to compensation? The salaries of the commissioners are neither increased nor diminished by any conclusion they may reach in regard to the payment of compensation. The state compensation fund is not raised by taxation upon the property of citizens in general. It comes from an annual assessment upon the pay-rolls of the various employers who are protected by the fund, the rate to be fixed by the commission so that the fund will be self-supporting and no more; sections 1413 and 1427 R. C. 1928. The only interest which any commissioner could, by the wildest flight of imagination, be conceived to have denying compensation to one entitled by law to receive it, is a desire to satisfy the employing class of the state by keeping the payroll assessment low. On the other hand, it might well be said there is an equal inducement to satisfy the more numerous employee class by making awards more liberal than the law permits. We think it is plain it cannot be presumed an honest commissioner would be biased by either motive. So far as we can see, a tribunal selected in the manner the law directs the commission to be chosen, will presumably be as impartial in making decisions as any other which could be established. As in all cases, assuming him to be honest, the character, temperament and general social point of view of the individual and disinterested trier of fact, be he commissioner, judge or juror, always will be the final determinant of the result which he will reach in a given case, if the evidence is doubtful or close, and this is something which cannot be changed nor prevented by any conceivable law.

It is urged that the commission has shown clearly by its past record that it will invariably accept the testimony of its own medical advisor and its medical rating board as against the opinion of the medical witnesses appearing for a claimant, and that this fact establishes definitely that it is not a fair and impartial tribunal, but is biased and prejudiced. Whether this alleged attitude of the commission exists in all cases which come before it, we have no means of knowing, but it does appear from the cases which have come before us that such is its general custom. We think, however, assuming that fact to be true, there is perhaps a reason therefor which has not been fully considered by those who contend this practice shows bias and prejudice against a claimant. It must be presumed the

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commission chooses a medical advisor because its members have confidence in his integrity and ability, for if the commissioners are honest men themselves, these above all things are the qualifications which they will necessarily desire in a medical advisor. He is upon a fixed salary, and certainly has no pecuniary interest in either advising that compensation be granted or that it be denied, for his income is in no way affected by the award made by the commission. The medical rating board, which is apparently the final medical authority whose opinion in doubtful cases the commission is apt to take, even in preference to that of its own chosen advisor, is selected in a manner entirely different. The president of the Arizona Medical Association selects a number of specialists in the various lines of medicine and surgery, in accordance with his judgment, to be the permanent Industrial Relations Committee of the Association, and this committee is requested by the commission to act as a medical rating board. These experts meet from time to time to examine these claimants concerning whose condition and right to compensation there is doubt, from a medical standpoint. Their compensation for so doing is fixed by and paid by the commission, regardless of the nature of their recommendations. It seems to us beyond any reasonable probability that a board composed as we know from the frequent reports which we have examined, of men of the very highest standing in their chosen profession, would render a report based on anything but their honest opinion and their best skill. And it appears that any tendency on the part of the commission to accept the professional opinion of such experts rather than that of other experts who, though of equal standing in the profession, in most cases are dependent on an award being made to the claimant for compensation for their services, and who have been selected as witnesses only after the claimant has ascertained their testimony will support his claim, is explained reasonably on the theory that the commission believes a witness who has an interest in the result of a case and has been called because the party knows in advance his testimony will be favorable, is more apt to be biased, even unconsciously, and therefore mistaken in his judgment, than one who has no financial interest in the nature of the award, and is not chosen because of a previously expressed opinion in the instant case, but whose testimony will be used in all

cases which he examines, regardless of whether it favor a claimant or not.

The testimony of expert witnesses selected and paid for by the litigants is so notoriously unreliable that it has even passed into a proverb, and the positive, comparative and superlative degrees of prevaricators are frequently illustrated by "the liar the _____ liar, and the expert witness." This fact has been recognized by our legislature, and it has provided, in substance, that in civil actions for personal injuries the court may select expert medical witnesses to examine the injured party and to testify concerning his condition. Section 4468, R. C. 1928. Certainly under all these circumstances, we cannot say the fact that the commission believes the experts not chosen by the interested party rather than the ones he has selected shows, as a matter of law, that as a trier of fact it is not fair and impartial. We realize that all men are liable to error at time, and we have no doubt that there have been cases where the medical advisor of the commission, the medical rating board, and the commission itself have made mistakes, but in view of all those things which we have set forth, we think that to hold the method of choosing expert advisors, such as the commission has adopted, and its habit of believing such advisors, is a denial of due process of law and of a fair and impartial hearing, would be without any base in reason or probability.

Finally assuming, solely for the purpose of argument and without any intimation on our part that it be true as a matter of fact, that everything that petitioner in this case asserted or even suggested in regard to the commission is true; that its awards are, in many cases, unfair to claimants; that it willfully and even maliciously and corruptly is seeking to deny just compensation where it is due, we think it is evident from our review of the method of choosing the commission, its powers, duties and interest, and its method of determining which witnesses should be believed, that the trouble is not with the *system* established by law and by the rules of the commission, but solely with the individual commissioners, and that petitioner's charges, in effect, are that the commissioners themselves are wholly unfit, either by temperament or character, to hold the positions which they occupy. If these charges are true, and of course we express no opinion in regard to that matter, the remedy is political and not legal. It

is not the system which should be changed but the individuals who administer it. If an individual judge is incompetent or corrupt, we do not, on that account, attack the organization of the courts; we remove the individual and secure a better man.

We hold, therefore, that the petitioner in this case has had an opportunity to present his claim before a tribunal which, in its essential nature, is presumably fair and impartial, and which is not disqualified by any interest from sitting on compensation cases. Whether a mistake has been made in the conclusion which the commission has reached on conflicting evidence in the present case, is not within our province to determine.

The award is affirmed.

ALFRED C. LOCKWOOD,
Chief Justice.

Conecurring:

A. C. McALISTER
Judge

HENRY D. ROSS
Judge

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REPORT Public Relations Conference AMERICAN MEDICAL ASSOCIATION, CHICAGO, ILLINOIS

M. W. Merrill, M. D., Chairman
Health Activities Board
Arizona Medical Association

The second annual public relations conference, national in scope, called by the A.M.A., was held in Chicago on November 5 and 6, 1949. Some of the meetings were held at the A.M.A. headquarters and the remainder of them at the Bismarck Hotel.

The first Public Relations Conference was held last year at Saint Louis. It was well attended and was an excellent conference. Many valuable ideas for use in public relations by state societies were brought out in this conference. This year's meeting was also very well attended, approximately 250 doctors, executive secretaries and others interested from all over the United States were in attendance. The meeting was called to order at 9:30 a. m., November 5 by Lawrence W. Rember, who is the Public Relations Director of the American Medical Association. He introduced Dr. George F. Lull, Secretary and General Manager of the American Medical Association, who briefly addressed the various members present, welcoming them to the convention. Following this Mr. Rember gave a few comments as to the purpose of the meeting and the meeting was then turned over for the morning program to Dr. Max M. Hattaway, who is Chairman of the Council on Medical Service and Public Relations of the Louisiana State Medical Society. Dr. Hattaway acted as the Moderator and Chairman of the morning session.

The general subject of the morning session was "Organizing For An Overall Public Relations Program." Dr. Donald B. Koonee, who is Chairman of the Public Relations Committee of the North Carolina Medical Society, gave the history of the development of the public relations program, in the state of North Carolina. The topic of his subject was "Organizing The State Public Relations Program at District and County Levels." Dr. Koonee pointed out how, in the brief past two-year period, they have increased in their state medical society their appropriation for public relations from \$600.00 to \$30,000.00. North Carolina has a very excel-

lent program outlined. The basis of their program is the contacting of every doctor individually in his office and selling him on the need for an active public relations program. In addition to this they have many other excellent projects with the state of North Carolina really doing a "bang-up" job, in promoting their public relations program.

The second subject of the morning was discussed by Dr. Percy E. Hopkins, who is chairman of the Committee on Medical Service and Public Relations of the Illinois State Medical Society. His discussion was on working with all other committees of the state society. Dr. Hopkins pointed out the necessity, particularly in the larger state societies, where they have a great number of committees doing work, for the public relations committee to keep in close contact at all times with the work of the other committees. First, to prevent overlapping and, secondly, to utilize the work of the other committees, whenever possible, in the public relations program. Illinois has an excellent public relations program and they are "on the ball" at all times keeping it rolling.

Dr. Charles L. Farrell, Chairman of the Committee on Public Policy and Relations of the Rhode Island Medical Society then talked on the "Cooperation Desired by Public Relations Committees from State Society and A.M.A. Headquarters." Dr. Farrell discussed the importance of a close cooperation between the Executive Secretaries of the State Medical Associations and the public relations committees. He also stressed the importance of carrying the public relations program to each county society. He stressed particularly the importance of securing the cooperation of the presidents and secretaries of the various county components of the state societies. Dr. Farrell also outlined briefly how the Rhode Island Medical Society obtains their funds for their public relations program and some of the projects which they are undertaking. Following his discussion the meeting adjourned for lunch.

I might add that after each speaker had finished his topic, a fifteen minute question and answer period was conducted by the Chairman. During these intervals, many remarks of value were brought out by members from the floor bringing out these specific problems that are being met along public relation lines by the various county societies. After lunch, which was

held at the A.M.A. headquarters, the meeting was turned over to Dr. Cardle. Dr. Cardle is Chairman of the Health Education Committee of the Minnesota State Medical Association.

The general topic for the afternoon was "State Society Public Relations Projects." The first speaker was Dr. J. H. A. Peck, President of the Kansas Medical Society. Dr. Peck discussed the problem of getting doctors into rural areas and pointed out the details of the Kansas plan which has been quite effective during the past few years in getting doctors interested in practicing in rural areas. Dr. Peck pointed out that no better public relations can exist in rural areas than to get well trained young doctors into these areas to give medical service to the people. Dr. Peck went into quite some detail about the Kansas plan, how much money the state society was able to get from the legislature to enlarge the Kansas Medical School, the accent that is placed there on getting the younger doctors interested in rural practice. He talked some about the apprenticeship practice that is carried out in Kansas by some of the older doctors emphasizing its value to a young man who plans to go into rural practice. It was clear after hearing Dr. Peck's discussion that to meet the medical needs of the rural areas, particularly where they lack medical care, is an important step toward improving the public relations and in circumventing a national plan.

Dr. George H. Garrison, who is President of the Oklahoma State Medical Association, discussed the public relations value of a Grievance Committee. Dr. Garrison pointed out that in Oklahoma during this year the State Medical Association has formed a Grievance Committee. This so-called Grievance Committee is composed of the immediate five past presidents of the Oklahoma Medical Association. These five past presidents met as a Grievance Committee. Through the press it was advertised to all of the people in Oklahoma that anybody who had a grievance, or anybody who had been overcharged, or had what they considered a legitimate "kick" at the practice of some physician, could come to the Grievance Committee, put out their complaints in writing and the Grievance Committee would go into this with the doctor in question. Actually what has happened is that they have received a great deal of praise in Oklahoma for this Grievance Committee proposition and it has developed a lot of excellent public relations for

the Oklahoma State Medical Association. However, actually, they have had very little in the form of grievances to take care of. As a matter of fact, Dr. Garrison states that they have only had up to the present time about 12 complaints. Of these about four or five of them were obviously from irresponsible people, while the rest of them have been satisfactorily settled. Several other states have Grievance Committees under different names and everybody who has had anything to do with it states that this is an excellent public relations medium. It probably should be considered as a project for the Arizona State Medical Association.

Dr. McKinnie Phelps, who is Chairman of the Public Policy Committee of the Colorado State Medical Society, gave one of the very best talks of the conference. Dr. Phelps has been Chairman of the committee which has attempted to promote press relations in Colorado. The title of his talk was "Press and Radio Relations for County Societies and Individual Doctors." Colorado has done an excellent job in promoting their press relationships. It wasn't easy at first, particularly in Denver where they have two extremely active rival newspapers, but through a long series of meetings, cocktail and dinner meetings with various members of the press and the radio, Colorado has succeeded in establishing an excellent press-radio state society relationship. This not only holds for Denver but throughout the entire state.

It would be well for the state of Arizona to consider carefully the value that has been achieved through the public relations program carried on in Colorado.

Dr. C. Allen Payne, who is Chairman of the Advisory Committee of the Woman's Auxiliary to the Michigan State Medical Society, gave a discussion on the full utilization of the woman's auxiliary as a public relations force, and he made a plea for a wider use and a closer cooperation with the auxiliary in promoting public relations projects. Apparently in Michigan they have achieved a very close and a very satisfactory working arrangement with the woman's auxiliary, and the woman's auxiliary is proving to be a potent factor in promoting public relations. This discussion closed the afternoon meeting.

The evening meeting was held in the Walnut Room of the Bismarck Hotel and was under the

direction of Dr. Louis Bauer, who is Chairman of the Board of Trustees of the American Medical Association. After dinner Dr. Ernest E. Irons, President of the American Medical Association, gave a general discussion on "The Profession and Public Relations" with a strong plea for greater unity and for increased effort, stating that although at the present time we are not in as serious a danger from national socialization of medicine as we have been in the immediate past, that now is the time to work even harder to keep this program from becoming a reality. Mr. Leonard E. Read, President of the Foundation for Economic Education, gave an excellent discussion on the importance of every American realizing that we must work for and preserve our liberty, and that by doing this we are conducting a good public relations project.

The morning session held on Sunday, November 6, was under the direction of Dr. F. S. Winslow, Chairman of the Public Relations Committee of the New York Medical Society. The entire morning was devoted to an open discussion on the various public relations projects, carried on throughout the various state medical associations.

The strongest impression which I carried away from the Public Relations Conference was this—although we have made some progress throughout this country, more in some states than in others, in promoting our public relations programs—that now is no time to let this part of our activities subside. Although at the present time the problem of national socialization of medicine seems to be somewhat quiescent, it is important now for us to develop a permanent and a progressive public relations program because it is only through this means that we are going to be able to prevent in the future some national health act being put over in Congress. On the whole, the meeting was very good. It lacked a little perhaps in the spontaneous enthusiasm of the first public relations meeting. It was prob-

ably more of a sober working type of a meeting. There was some little re-hash of things that were said last year, but on the whole the interest of the state medical associations in sending such a wide representation was an indication that we do have a better realization now of the value of proper public relations.

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National Conference THE SECOND NATIONAL CONFERENCE ON PHYSICIANS AND SCHOOLS

Highland Park, Illinois, October 13-15, 1949

A—*The Family Physician and School Health Services.*

It is important that the records of the examination by the family physician or by the physician serving the schools should be made available to the school health service personnel. Local physicians and family physicians should be supplied with school examination record forms and one copy of this form should be returned by the family physician for each school medical exam done by him.

Family physicians, on the other hand, should request records of any examinations done in school by the school physician. These requests should be forwarded to the family physician directly and not through parents or children.

Medical examination records should be filed with the child's cumulative health record and must be kept so as to be immediately available to the family physician, school physician and health department.

Family physician and school physician should, by teacher-physician conferences, explain to the teacher any significant medical findings for her use in counseling. Teachers must safeguard confidential information.

In performing school physical examinations in his office, the physician should have available the reports of health appraisal from the observations and screening tests by school personnel.

Marked orthopedic defects and certain growth abnormalities which are obviously apparent to the teacher, nurse or physical educator, should be promptly referred to the family physician for further investigation.

Only in those instances, where there is no family physician, or where the deviation from normal is so slight as to make questionable the necessity of referring the matter to the family physician, should special medical examination by the school physician be done.

Because, in many instances a family physician cannot be made available for daily service, it becomes essential that teachers and nurses assume the responsibility for making certain health inspections for the purpose of finding those chil-

dren in need of medical services and proper referral be made to the family physician.

It was strongly recommended that the family physician use the examination record form in use in the schools in the area. He should make such suggestions regarding exercise and modification of the school schedule as indicated from his examination. If, in a transfer of his record to the school record, a breach in the confidential relationship between doctor and patient might occur, he should, instead, give such information in confidence to the physician serving the school.

Schools are not established as health centers or diagnostic clinics but as educational institutions playing an integral part in health education.

When an accident occurs, or when a pupil becomes ill the family physician should be called immediately. In cases where this is impossible or physicians are not available, the school medical advisor or any other immediately available physician should be called, but the services of such a physician should be limited to the immediate emergency care that is needed.

The usual practice of competent first aid in managing emergencies of sickness or accident should not be exceeded by teachers and nurses. They should not diagnose nor should they administer any medication of any sort except as prescribed by a physician. The family physician's name, address and telephone number should be made a part of the pupil's permanent school health record.

The family physician can best participate in the control of communicable disease by basing his policies on the most recent and authoritative public health practices. The physician's responsibility is to encourage parents to make full use of all available preventive measures.

Physicians must realize that control of communicable disease is the special and legal responsibility of the public health officer and his staff, and he should solicit and follow their recommendations.

Where adequate public health services are not available the local medical society should be called on for guidance.

Many schools have their own physician or medical advisor with whom to consult on medical or school health matters, but special or required periodic medical examinations should be done by the family physician.

B—The School Health Program and School Physician.

Strong emphasis was made to the end that school physicians do not make medical examinations their only function. Wherever possible all physical exams should be done by the private practitioner of medicine and recorded on the pupil's health card. However, this policy must have flexibility to allow school physicians to make examinations.

The school physician should:

1. Advise with family physicians, parents, and school authorities with regard to health supervisory activities.
2. Advise school administrators regarding conditions especially conducive to the maintenance of healthful school environment.
3. Work with his local health department, medical and dental societies, and community groups to assure necessary health services for all children. All school health authorities should confer with the medical and dental professions in planning the follow-up and treatment program.
4. Coordinate all school health programs with community health programs especially in the fields of communicable disease control, health education and medical and dental services.

The medical and dental professions should be contacted through a community health council with representatives of the medical and dental professions, public health personnel and school health people. The medical coordinator should be an individual with a primary interest in school health and with special training and experience in his field.

C—Role of Schools, Health Departments and Medical Societies.

The desirable role of each of the three agencies would be the formation of Health Councils. Only in such a way can all health activities be co-ordinated to fit problems arising in different communities. This conference strongly recommended that this be done on State and Local levels. The belief was apparent that the best qualified person should explain and interpret any developing program to the three agencies. The state health department, with cooperating medical societies, can be very helpful to each other in presenting this program to practicing physicians in any community. It was shown that the continued availability of advice from state health departments is an important element in the success of local cooperative programs.

The problem of adequate compensation for school medical services was discussed only briefly and nothing tangible resulted.

This conference went on record as recommending the following:

1. All state and local medical societies should sincerely sponsor community health conferences and all school health problems be fully considered in order to stimulate forward planning.
2. Rural school health problems be especially considered.
3. The health council should send as a nucleus in promulgation of school health services. Medical societies must be sold on this idea and should, at least, follow through on a presumptive diagnosis, either right or wrong.

Other factors of no particular interest to the medical profession or the health office were also brought up for discussion. No mention of them is made in this report, but I certainly will be only too happy to bring them to the attention of the Arizona Medical Society, upon my return to the state next June.

Signed:

L. R. Mezera, M. D.,
Director, Maternal, Child Health
Arizona State Department of Health.

(Dr. Mezera represented the Arizona Medical Association at the Second National Conference on Physicians and Schools, held at Highland Park, Illinois on October 13-15, 1949.)

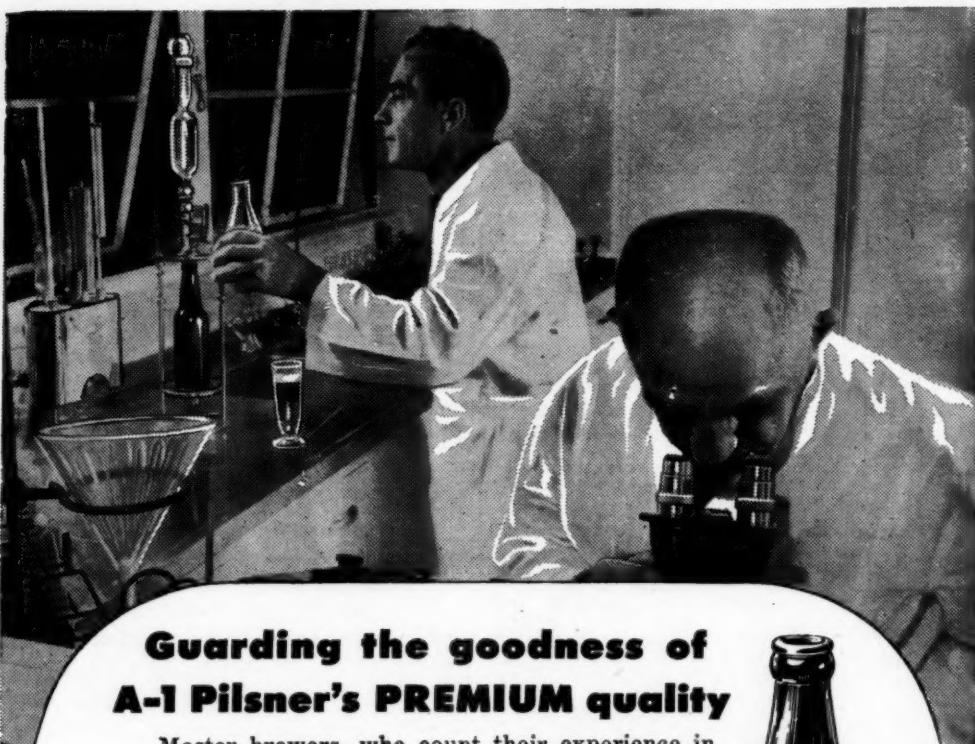
NOTICE

The next meeting of the ARIZONA SOCIETY of PSYCHIATRY and NEUROLOGY will be held in Tucson, Arizona, Saturday, March 18th, at the Tucson Medical Center at 3 P. M. Dr. Tracy J. Putnam, eminent Neurologist, will speak on "The Treatment of Epilepsy."

Philip S. Greenbaum, M. D.,
Secretary.

The appointment of Charles E. Lewis as Vice-President of L. W. Frohlich and Company, Inc., pharmaceutical advertising agency, has been announced as of February 1, 1950. Mr. Lewis has been associated with the agency since 1946 in the capacity of Account Executive.

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PERSONAL NOTES

DR. EDITH LORD, new state supervisor for mental hygiene in Arizona, addressed the Sunday Evening Forum in Tucson on the topic of "Mental Hygiene in Everyday Living." Speakers at the Forum are usually noted public figures from other parts of the world.

The first move to obtain help for children with cerebral palsy was recently made when the "Cerebral Palsy Foundation of Southern Arizona" was formed and incorporated by 100 residents of Tucson. Among the associates are **DRS. Lindsay BEATON, HOLLIS BRAINARD, GEORGE DIXON, DAVID MARCUS, C. M. WITZBERGER, and PROF. M. M. R. SCHNECK**.

DRS. BAKER and **SHAPIRO** of Tucson attended the annual meeting of the American Academy of Dermatologists and Syphilologists in Chicago on December 3rd to 9th.

The census of former Arizona students who are now studying medicine has risen. Eighteen who graduated from the University last year are attending medical school, and six have already been accepted by January of this year for admission to Columbia, Yale, Harvard, N. Y. U., and Northwestern.

The Tucson Veterans Administration Hospital has just announced completion of kitchen and dining facilities costing \$300,000.

The program of lectures at the Hospital includes a report on "ACTH and Cortisone" by **DR. W. PAUL HOLBROOK** of Tucson, and "Intractable Pain in Neoplastic Disease; the Neuro-surgical Measures for Relief" by **DR. H. G. CROCKETT** of the Veterans Administration of Los Angeles.

A controversy between the Federal Security Administration and the Arizona state welfare commission has resulted in a compromise. The federal board withdrew allocated funds (the balance of \$50,000 for the fiscal year). As a result the operation of such projects as the rheumatic fever program at the Tucson Medical Center were to be closed.

The sudden closures were due to a reversal of an earlier ruling by Dr. Edwin Daly, assistant to the chief of the children's bureau, FSA. The first decision was to withdraw all funds unless Arizona used 15% of its crippled children's budget to care for Indian reservation children; then it was agreed to support any child now hospitalized; and next it was learned that the first decision would be maintained.

This is the second federal withdrawal within a year. The U.S.P.H.S. recalled a tuberculosis control director, who was here on loan, shortly after the state failed to allocate funds for care of tuberculosis.

DR. ROBERT S. FLINN, President of the Arizona Medical Association, addressed the Pima County Medical Society on "An Account of My Observations in England."

An explanation of the methods which are being used by the Alameda County Medical Association (California) to protect the public were explained by **MR. ROLLAN WATERSON**, Executive Director of the Association. The efforts to inform the public of their excellent plan, copies of which have been sent to many members of the Arizona association, have seemed to be about as good as possible.

The new officers of the PCMS are **DRS. HUGH THOMPSON**, president; **BRICK P. STORTS**, vice-president; **WILLIAM B. STEEN**, secretary-treasurer, and **HAROLD W. KOHL**, Censor. Elected to the County Hospital Medical Advisory Board were **DR. DAVID E. ENGLE** and **DR. MAX COSTIN**. The three-year delegates are **DRS. O. J. FARNESS, R. W. RUDOLPH**, and **DONALD B. LEWIS**; two-year delegate, **J. B. LITTLEFIELD**; and for one year, **C. J. NEWCOMB**.

The Square and Compass Crippled Children's Clinic at 2900 East Broadway, Tucson, was dedicated at its completion in December. The project was constructed with local funds, and with donated labor, equipment, and materials. Thirteen local organizations have become continuous participating or contributing sources, and ten other groups have aided. Representatives of contracting and labor groups, radio stations, and newspapers were among the honored guests.

Arizona has received a portion of its funds for research from the American Cancer Society. Dr. Herbert L. Stahnke, director of the poisonous animals research laboratory at Arizona State College, Tempe, will use the \$1,000.00 grant to determine the effect of various venoms on malignant growths.

DR. BRUCE HART, superintendent of the Arizona State Hospital for the Insane, has announced the appointment of **DR. H. H. BROWN** as clinical director. Dr. Brown has been a member of the staff of the North Carolina State Hospital, and has recently completed post-graduate work in psychiatry at Duke University.

An Arizona resident, Mr. Dixon Fagerberg of Prescott, has given the income from fifty thousand dollars worth of Missouri property to the Kansas University Endowment Association for medical research.

Funds of this sort could be used to finance the work of a Clinical Research Group in Tucson or Phoenix, as has been recommended in the columns of ARIZONA MEDICINE. Physicians form the logical contacts to obtain such funds.

At the annual meeting of the Maricopa County Medical Society in Phoenix December 5, 1949 **DR. E. W. MELICK** was elected President-elect; **DR. FRANK EDEL** was elected Vice-president, and **DR. DAVID JAMES** was elected Secretary-Treasurer. The 1949 President-elect, **DR. HENRY WILLIAMS**, has assumed the Presidency.

At this meeting of the Maricopa County Medical Society an interesting subject, "Air Pollution," was discussed by **MR. LEWIS R. JERWITZ** of the U. S. Weather Bureau in Phoenix, and **DR. GEO. McKHANN**. The interesting program was made more so by a talk by the U. S. Public Health Service officer, Chief of the Field Service, Sanitary Engineer, **MR. HENRY DOYLE, Sr.**, from Salt Lake City, Utah.

ROLLEN W. WATERSON, Executive Secretary Officer of the Alameda County Medical Society, discussed the Alameda County Medical Association Medical Plan and answered questions at the January meeting of the Maricopa County Medical Society. The matter of adapting such a plan for Maricopa County or for Arizona was left in the hands of a committee for study.

St. Joseph's Hospital Staff elections were held in Phoenix, and the following officers were elected: President, **DR. J. MADISON GREER**; Vice-President, **DR. ROBERT BARFOOT**, and Secretary, **DR. ROBERT CUMMINGS**.

At the annual meeting of the Good Samaritan Hospital Staff in Phoenix, **DR. GEO. ENFIELD** was elected President; **DR. REED SHUPE**, Vice-president, and **DR. DONALD G. CARLSON**, Secretary.

The officers of the St. Monica's Hospital Staff were unanimously re-elected, without change from the 1949 officers—**DR. ROBERT FLINN**, President, **DR. PAUL SINGER**, Secretary.

Lawrence Reynolds, roentgenologist of the Harpers Hospital in Detroit, spoke to the staff of St. Joseph's Hospital, Phoenix, in a most interesting fashion on the Radio-active Isotopes. He strongly recommended in the future construction of local hospitals that radio-active isotope laboratories be included in their construction.

He very accurately outlined the value of the radio-active isotopes in the diagnosis and treatment in medicine today.

A new club has been organized in Phoenix patterned somewhat after the Phoenix Clinical Club. It is called the "Osler Club." The President of this group is **DR. HAYES CALDWELL**; Secretary, **DR. AUDREY URRY**.

DR. FRANK MILLOY, Jr., Phoenix, began a four-years residency in surgery at the Cook County Hospital in Chicago on January 1st.

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Acceptance of two new member hospital applications by the Board of Directors of Arizona Blue Cross brings the state's total of Blue Cross member hospitals to twenty-two.

Newest members are the Benson Hospital and the Douglas Hospital of the Phelps Dodge Corporation. Both memberships became effective on January 1.

The Douglas Hospital was established by the Phelps Dodge Corporation to serve its employees and the community at large. Dr. Nicolo V. Alessi has been in charge since 1932.

The 10-bed Benson Hospital was established at the beginning of 1949 by Dr. J. M. Hesser, the only doctor of medicine in the eastern Arizona community. Mrs. Mary Lou Hesser is administrator.

"We are proud to welcome the Douglas and Benson Hospitals into the family of Blue Cross member hospitals," said L. Donald Lau, Executive Director of the Arizona Blue Cross and Blue Shield Plans. "Their Blue Cross memberships assure our members in the Douglas and Benson areas the full benefits of membership without the necessity of traveling from their home communities for hospital care. Local Blue Cross membership will be vastly encouraged."

In addition to the Benson and Douglas Hospitals, the Arizona Blue Cross member hospitals now are: Good Samaritan, St. Joseph's and St. Moniea's in Phoenix; St. Mary's and the Medical Center in Tucson; Copper Queen Hospital, Bisbee; Marcus Lawrence Hospital, Cottonwood; Pinal General Hospital, Florence; Mohave General Hospital, Kingman; Flagstaff Hospital, Flagstaff; Southside Hospital, Mesa; Inspiration Hospital, Miami; St. Joseph's Hospital, Nogales; Holbrook Hospital, Holbrook; Community Hospital, Prescott; Tempe Hospital, Tempe; Community Hospital, Wickenburg; United Verde Hospital, Jerome; Winslow Hospital, Winslow, and Yuma General Hospital, Yuma.

Arizona Blue Cross added 9,802 to its membership in 1949, bringing the total to 109,832 at the end of the year. This is about one in six of the state's population, with population figures based on recent unofficial estimates of something in the neighborhood of 700,000.

The \$2,000,000 mark in payments to hospitals was passed by Arizona Blue Cross on November 15, just thirteen months after the first million was reached in October, 1948. The payment which boosted the figure over \$2,000,000 was made to the Community Hospital in Wickenburg.

Arizona Blue Shield continued its steady climb in enrollment during 1949, with a gain of 18,361 over the 32,476 membership at the end of 1948—for a total net membership of 51,837. There were 17,548 Blue Shield contracts effective last December 31, for an average of 2.95 participants per contract.

Latest national figures from the Blue Cross Commission show that more than 35,000,000 persons were enrolled in ninety plans in the United States and Canada at the end of last September—or about 22 per cent of the population.



FEDERAL AID TO MEDICAL EDUCATION

A Joint Statement by the Board of Trustees
and the
Council on Medical Education and Hospitals
of the
American Medical Association on
Senate Bill S. 1453 and H. R. 5940

The following statement was prepared jointly by the Board of Trustees and the Council on Medical Education and Hospitals of the American Medical Association. The statement was adopted by the House of Delegates of the American Medical Association at the Clinical Session in Washington, D. C., December 8, 1949.

The Twelfth Point of the American Medical Association's program for the advancement of medicine and public health supports financial aid to medical education "with funds free from political control and regulation of the medical and allied professional schools." This point was elaborated by the Board of Trustees after consultation with the American Medical Association's Council on Medical Education and Hospitals as follows:

"Some medical schools are finding it difficult to secure sufficient funds to maintain their standards of training. The American Medical Association would prefer to see medical schools receive the support they require from private philanthropy or local public funds. Unless and until such support is provided, it may be necessary for some medical schools to accept financial aid from the federal government. Such aid, however, must carry with it the assurance of freedom from political control and regulation.

"To preserve the freedom and independence of the medical schools, it is important that the responsibility for determining which schools may qualify for federal aid should reside in the states. This can be satisfactorily accomplished if the legislation provides that any medical school shall be eligible for financial aid if three-fourths of the states through their medical licensing boards judge the schools to be conducting an educational program of sufficiently high quality to warrant the admission of its graduates to their state examinations for medical licensure.

"To encourage continued local support of medical education from public and private funds, the formula for allocating federal aid should provide only a limited portion of a school's total budget.

"Since medical schools are already increasing

enrolments as rapidly as they can expand their facilities, the provision of a relatively large financial premium which might induce certain schools to enroll more students than they could properly accommodate should be avoided.

"The formulas for the allocation of all funds should be simple in principle and written into the law. The responsibility and authority of the officials administering the program should be limited to an audit to determine that the funds are employed for the general purposes for which they were granted.

"Any federal scholarship program should leave the medical schools entirely free in the selection of their students and should avoid the regimentation of the future careers of the recipients."

Following the favorable report by the Senate Committee on Labor and Public Welfare of an amended version of S. 1453, the Council on Medical Education and Hospitals submitted the following statement to the Board of Trustees:

"On August 3, 1949, Senator Pepper, on behalf of the Committee on Labor and Public Welfare, reported favorably to the Senate an amended version of S. 1453, the bill which he had introduced in March, 1949 to provide federal aid for medical education. The amended bill was prepared following public hearings by the Sub-committee on Health on all bills concerned with federal aid to medical education and following a two-day conference with the professional staff of the Subcommittee in which representatives of the American Medical Association and the medical schools participated. The bill in its present version carries the unanimous endorsement of the full Senate Committee on Labor and Public Welfare.

"The bill in its present form represents in general a distinct improvement over all earlier measures. The following changes have been made which represent concessions of varying degrees to the requests made by the American Medical Association representatives at the hearings and the conferences referred to above:

"1. The payments to the medical schools have been changed from \$300 for each student enrolled up to a school's average past enrolment and \$1,700 for each student enrolled in excess of a school's average past enrolment to \$500 and \$1,000 respectively, and a limitation of 30 per cent of the average past enrolment has been set for the number of students for which the higher rate of \$1,000 will be paid.

"2. The total payment that the Federal government may make to any school has been reduced from 50 per cent of the school's budget to 40 per cent.

"3. The provision for federal scholarships for medical students has been rewritten so that no scholarships will be provided so long as the medical schools are able to fill their enrolments with students who do not need federal scholarship aid.

"4. The constitution and powers of the National Council on Education for Health Professions have been improved so as to provide a more effective check on the Surgeon General's powers in administering the act.

"5. The provisions of the act are effective only for a five-year period, at the end of which time the Congress will have to determine whether to continue such aid and, if so, in what form.

"Despite these improvements the bill contains several provisions which are objectionable to varying degrees:

"The \$1,000 payable for each additional medical student will be paid to new medical schools for all students. This provision unduly and unfairly favors new schools over established schools in the matter of federal aid. Our representatives had recommended that the same limitation on the number of students for whom the higher payment of \$1,000 would be made, namely 30 per cent of the enrolment be applied to new schools as well as to old schools.

"The bill provides \$5,000,000 annually for grants for construction to assist in the establishment of new schools in the health professions and in the improvement and expansion of existing facilities, these grants to be made by the Surgeon General in the order of the estimated importance of the requests received. Our representatives felt that no grants for construction should be made until the needs of all the medical schools had been surveyed and a balanced, long range program developed. They also felt that vesting in the Surgeon General full authority to award such grants opened the door for political pressure and interference. This last objection has been partially met by providing that the Surgeon General should obtain the advice and recommendations of the National Council on Education for Health Professions before awarding such grants, but there is nothing in the bill that would prevent him from disregarding the advice and recommendations of the Council.

"Mention should be made of the fact that the bill gives the National Council on Education for Health Professions rather sweeping authority to investigate the medical schools and to determine their capacity to maintain and expand student enrolments, to establish a uniform method of calculating costs of instruction and to determine the extent to which equal opportunity to gain

an education in the health professions is afforded all properly qualified students.

"We recognize that the National Council must be in a position to obtain information necessary for carrying out the purposes of the Act. How the National Council can be given proper authority without being put in a position where it can interfere with the administrative policies of the medical schools presents a dilemma, the solution to which is not readily apparent."

Since S. 1453 has now passed the Senate, and since it appears doubtful that further changes will be made by the House in the companion bill, H. R. 5940, the Board of Trustees feels it must oppose this bill.

The criticisms offered by the Council on Medical Education and Hospitals clearly indicate that this bill is not satisfactory, and it is potentially dangerous to the continued academic freedom of the medical schools. Even though the bill provides for federal aid for only five years, if enacted, it will be difficult after such a period to change the relationship of the federal government to the medical schools except to permit further government control.

The comment of the Council on the opportunity for the exercise of political pressure and interference with respect to grants for construction is particularly well taken. If political pressure and interference are possible in one phase of a school's activities, they can without great difficulty be brought to bear on other phases.

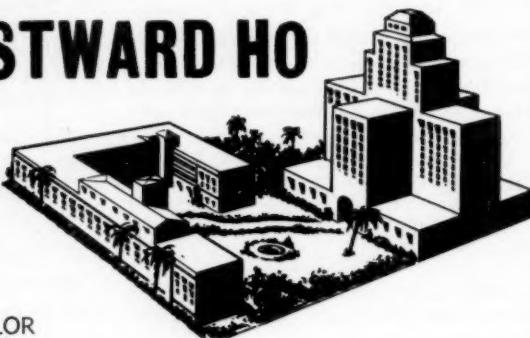
Too much potential authority to interfere with the internal administration of the medical schools is granted to the National Council on Education for Health Professions. As stated in the 12-Point Program of the American Medical Association, to protect the freedom of individual schools, "The responsibility and authority of the officials administering the program should be limited to an audit to determine that the funds are employed for the general purposes for which they were granted." Any program of grants in aid to medical education has far reaching implications with respect to the freedom of the medical schools. No program should be embarked upon until protection of this freedom is absolutely guaranteed. The Board of Trustees feels, therefore, that since this bill does not guarantee such freedom, and since the bill contains other undesirable features, as pointed out by the Council, it must urge opposition to the enactment of this bill.

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WOMAN'S AUXILIARY



BIOGRAPHICAL SKETCH OF
MRS. JESSE D. HAMER

Mrs. Jesse D. Hamer is a charter member of the Woman's Auxiliary to the Arizona Medical Association and has served as state president and as president of the Woman's Auxiliary to the Maricopa County Medical Society. In addition to holding several other offices she has been chairman of various committees in both the state and county auxiliaries. In the Woman's Auxiliary to the American Medical Association, she has served as Chairman of Legislation, as a Director, as Regional Chairman of the War Service Committee, and has been a member of the Finance and other committees. She was elected to the office of President-Elect at the annual meeting held in Chicago in June, 1944 and was installed as National President at the annual meeting in San Francisco, California in July, 1946.

Since completing the term as president of the National Auxiliary in June, 1947, Mrs. Hamer has served as a Director on the National Board. She has also held the position as Historian and been a member of the Finance Committee. As one of the three immediate past presidents, she is, in addition to the above, serving as a member of the committee which supervises the Traveling Fund of the Auxiliary.

Mrs. Hamer has been actively interested in many community activities and has held various offices in the county and state Nurses' Associations, the Y. W. C. A., the Community Chest, American Red Cross and Social Service Center of Phoenix. She is at present a member of the Board of Directors of the Visiting Nurse Service of Phoenix.

PIMA COUNTY

Florence Monahan Speaks to Medical Auxiliary

Miss Monahan, former superintendent of the Minnesota Reformatory for Women, Illinois Training School for Girls, Washington Training School and the California Reformatory for Women at Tahatchapee, gave a very interesting talk on "Women in Crime" at the monthly Auxiliary meeting held Tuesday evening at the Santa Rita Hotel.

Miss Monahan is now on the staff of the Catholic Social Service in Tucson. She is a national expert on penology and is the author of a book entitled "Women in Crime." She stated that women comprise less than 2% of all criminals in the country, and that the basis for the majority of their crimes is some emotional attachment. Eighty to ninety per cent of all crimes, she stated, were some form of stealing.

Prisons for women differ architecturally from most prisons for men. Women inmates live in cottages with no bars, and the tension and fear so prevalent in prisons for men is completely lacking. The staff mixes with the prisoners and a friendly feeling prevails.

She stated that the Baker Foundation in Boston made a survey on the cause of delinquency among children and found that children who were unhappy and dissatisfied at home were most apt to become delinquent.

Miss Monahan gave a delightful talk describing her experiences which was thoroughly enjoyed by members of the auxiliary.

Mrs. Max Costin was appointed Blood Donor Recruitman Chairman to recruit volunteers among the Pima County Medical Auxiliary for the American Red Cross.

MARICOPA COUNTY

January News

Those who attended the annual Christmas dance in the Fiesta Room of the Hotel Westward Ho consider it one of the most successful in the history of the Auxiliary. An excellent buffet supper was served from 8:30 to 10:30, with music for dancing by Vern Suter's orchestra. Mrs. Charles Van Epps was in charge of arrangements.

During the holiday season, members of the Auxiliary derived a great deal of pleasure from giving to a needy family. The recipients were a patient crippled with arthritis and his mother; the gifts, an electric blanket and large basket of food.

At the December meeting, Mrs. Benjamin Herzberg, the State President-elect, gave her report of the Chicago Conference of Presidents and Presidents-elect, and Chairmen of Standing

Committees of the National Auxiliary to the American Medical Association.

Because of their success with the Community Chest work, the Maricopa County Medical Auxiliary has been asked to take over in a similar way the responsibility of the doctors' contributions to the Red Cross. The Board has agreed to do this. At the same time, the Board voted not to take over any additional charity in the future.

The Auxiliary has an opportunity to make some extra money for its donations to the various health funds. They have a large block of good tickets (200) for Sunday, February 19th, for one performance of the Sombrero Playhouse production, *My Sister Eileen*, starring Una Merkel. Prices are the same as usual, and the Auxiliary will get a forty per cent commission on the tickets sold.

Mrs. John R. Green,
Publicity Chairman,
Maricopa County Auxiliary.

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